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ATLAS OF THE FLORA OF NEW ENGLAND: MONOCOTS EXCEPT POACEAE AND CYPERACEAE

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ABSTRACT. Dot maps are provided to depict the distribution at the county level of the families of Monocotyledons except Poaceae and Cyperaceae growing outside of cultivation in the six New England states of the northeastern United States. The 325 of the 329 taxa (species, subspecies, varieties, and hybrids, but not forms) treated are mapped based on specimens in the major herbaria of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut, with primary emphasis on the holdings of the New England Botanical Club Herbarium (NEBC). Brief synonymy to account for names used in recent manuals and floras for the area, habitat and chromosome information, and common names are also provided.

Key Words: flora, New England, atlas, distribution, Juncaceae, Liliaceae, Orchidaceae, Potamogetonaceae, aquatic plants, rushes, lilies, orchids

This article is the third in a series that will present the distributions of the vascular flora of New England in the form of dot distribution maps at the county level (Figure 1). The atlas is posted on the internet at http://www.herbaria.harvard.edu/~rangelo/Neatlas0/WebIntro.html where we will attempt to keep it updated.

This project encompasses all vascular plants (pteridophytes and spermatophytes) at the rank of species, subspecies, and variety growing outside of cultivation in the six New England states. Hybrids are also included, but forms and other ranks below the level of variety are not. The dots are based primarily on voucher specimens in the herbaria of New England representing reproducing populations, or plants persisting long after cultivation when it is uncertain that they are actually naturalized. This third installment includes the families of the Monocotyledoneae except the Poaceae and Cyperaceae. The number of taxa treated is 329,

of which 325 are mapped. Of these 329 taxa, 56 (mostly in Liliaceae) are not native to the region. Future accounts will treat the distribution of the rest of the angiosperms.

We intend to gather this series of articles, together with additional background material, into a separate volume upon completion of all the maps. It is our hope, in the meantime, that these articles will stimulate additional field work to supplement the distributions portrayed in the maps. The New England Botanical Club herbarium, which has proven to be the most important resource for this project, is especially eager to receive specimens documenting range extensions. We also would like to be informed of such specimens in other herbaria. Similarly, because the atlas of the New England flora will be continuously updated as new information becomes available, we are eager to receive notification of published corrections of cytological information and new, documented chromosome counts for taxa in the New England flora.

MATERIALS AND METHODS

Materials and methods are as outlined in Angelo and Boufford (1996) and are not repeated here.

TAXONOMY AND FORMAT

The taxonomy and nomenclature adopted for this work essentially follow that of the Flora of North America project in progress, except that families, genera, and species are arranged alphabetically. Named and unnamed hybrid taxa are placed alphabetically at the end of the genus. Unnamed hybrids combine the names of the progenitors alphabetically by epithet. Taxa that are not native to New England are indicated by uppercase text. Unpublished names are not used, even if publication is pending.

Cited chromosome numbers are taken from indices prepared by Cave (1958a, b, 1959a, b, 1960, 1961, 1962, 1963, 1964, 1965), Goldblatt (1981, 1984, 1985, 1988), Goldblatt and Johnson (1990, 1991, 1994, 1996), Löve and Löve (1975), Moore (1973, 1974, 1977), and Ornduff (1967, 1968, 1969). Very few of the counts are based on material from New England, but instead reflect counts made from throughout the range of the taxon.

Synonymy is provided primarily with respect to names ac-

cepted in standard manuals covering New England published from 1950 onward, including Fernald (1950), Gleason (1952), Gleason and Cronquist (1991), and Seymour (1982). Synonyms have not been provided where the distribution for the synonymized name does not include New England.

The following list will aid readers in finding familiar names that have been transferred to other taxa:

ARACEAE (*Acorus*)	⇒	ACORACEAE
AMARYLLIDACEAE	⇒	LILIACEAE
Habenaria (in part)	⇒	*Coeloglossum*
Habenaria (in part)	⇒	*Platanthera*
LILIACEAE (*Smilax*)	⇒	SMILACACEAE
LILIACEAE (*Yucca*)	⇒	AGAVACEAE
Lophotocarpus	⇒	*Sagittaria*
Orchis (in part)	⇒	*Amerorchis*
Orchis (in part)	⇒	*Galearis*
Potamogeton (in part)	⇒	*Stuckenia*
Smilacina	⇒	*Maianthemum*

The following species are reported from our area in manuals, but no specimens were seen, or the substantiating specimens were misidentified:

Melanthium hybridum Walter (no specimen seen)
Smilax bona-nox Linnaeus [misidentified: = *S. rotundifolia* Linnaeus (Sorrie 1987)]

ANGIOSPERMAE (MAGNOLIOPSIDA)—ANGIOSPERMS

MONOCOTYLEDONEAE (LILIIDAE)

ACORACEAE

Acorus americanus (Rafinesque) Rafinesque—Sweet Flag (Figure 2). $2n = 24$. Marshes, shores, wet meadows. [*A. calamus* misapplied; The mapped distribution may include specimens of the introduced sterile triploid, *A. CALAMUS*, which is not generally distinguished in herbaria.]

ACORUS CALAMUS Linnaeus—Sweet Flag (Figure 2). $2n = 36$. Marshes, shores, wet meadows. From Europe. [This sterile

triploid is not separated from the native species in most herbaria.]

AGAVACEAE

YUCCA FILAMENTOSA Linnaeus—Yucca (Figure 2). $2n = 60$. Roadsides. From farther south.

ALISMATACEAE

Alisma gramineum Lejeune—(Figure 2). $2n = 14, 16$. Muddy shores and shallow water of basic lakes and streams.

Alisma subcordatum Rafinesque—Southern Water-plantain (Figure 3). $2n = 14$. Muddy or sandy shores, marshes, ditches, shallow water. [*A. plantago-aquatica* Linnaeus var. *parviflorum* (Pursh) Torrey]

Alisma triviale Pursh—Northern Water-plantain (Figure 3). $2n = 14, 28$. Muddy shores, marshes, ditches, shallow water. [*A. plantago-aquatica* Linnaeus var. *americana* J. A. Schultes & Schultes]

Echinodorus tenellus (Martius) Buchenau—(Figure 3). $2n = ?$. Sandy shores of streams and lakes. [*E. parvulus* Engelmann]

Sagittaria cuneata Sheldon—Wapato (Figure 3). $2n = 22$. Alkaline waters of muddy shores and shallow water of rivers.

Sagittaria engelmanniana J. G. Smith—(Figure 4). $2n = 22$. Acidic waters of shores, marshes, and bogs.

Sagittaria filiformis J. G. Smith—(Figure 4). $2n = ?$. Deep water of streams and in rapids. [*S. subulata* (Linnaeus) Buchenau var. *gracillima* (S. Watson) J. G. Smith]

Sagittaria graminea Michaux subsp. *graminea*—(Figure 4). $2n = 22$. Muddy or sandy shores, shallow water. [*S. eatonii* J. G. Smith]

Sagittaria latifolia Willdenow—(Figure 4). $2n = 22$. Muddy shores, ditches, bogs. [*S. latifolia* Willdenow var. *obtusa* (Muhlenberg) Wiegand]

Sagittaria montevidensis Chamisso & Schlechtendahl subsp.

spongiosa (Engelmann) Bogin—(Figure 5). $2n = 22$. Tidal mud flats of estuaries and salt marshes. [*S. spatulata* (J. G. Smith) Buchenau; *Lophotocarpus spongiosus* (Engelmann) J. G. Smith]

Sagittaria rigida Pursh—(Figure 5). $2n = 22$. Alkaline or brackish shores and shallow water.

Sagittaria subulata (Linnaeus) Buchenau—(Figure 5). $2n = 22$. Tidal mud.

Sagittaria teres S. Watson—(Figure 5). $2n = 22$. Acid sandy pond shores.

ARACEAE

Arisaema dracontium (Linnaeus) Schott—Green Dragon (Figure 6). $2n = 28, 56$. Rich or alluvial soil.

Arisaema triphyllum (Linnaeus) Schott—Jack-in-the-pulpit (Figure 6). $2n = 28, 36, 56$. Rich damp-to-wet woods, boggy places. [*A. triphyllum* var. *pusillum* Peck; *A. triphyllum* var. *stewardsonii* (Britton) Stevens ex Wiegand & Eames; *A. atrorubens* (Aiton) Blume; *A. pusillum* (Peck) Nash; *A. stewardsonii* Britton]

—*Arisaema* hybrids—

Arisaema dracontium (Linnaeus) Schott × *Arisaema triphyllum* (Linnaeus) Schott—(Figure 6).

Calla palustris Linnaeus—Wild Calla (Figure 6). $2n = 36, 60, 72$. Bogs, marshes, swampy woods, pond margins, shallow water.

Orontium aquaticum Linnaeus—Golden Club (Figure 7). $2n = 26$. Shallow water of ponds, sandy, muddy, or sphagnous shores.

Peltandra virginica (Linnaeus) Schott—Arrow Arum (Figure 7). $2n = 112$. Shallow water or mud at margins of ponds and streams, swamps, bogs, damp meadows.

Symplocarpus foetidus (Linnaeus) Nuttall—Skunk Cabbage (Fig-

ure 7). $2n = 26, 60$. Swamps, damp thickets and woods, wet meadows, shores.

BUTOMACEAE

BUTOMUS UMBELLATUS Linnaeus—Flowering Rush (Figure 7). $2n = 16, 20, 24, 26, 30, 39$. Muddy shores and marshes. From Eurasia.

COMMELINACEAE

COMMELINA COMMUNIS Linnaeus—Asiatic Dayflower (Figure 8). $2n = 16, 22, 28, 32, 36–90$. Waste places, roadsides, disturbed moist soil in shade. From eastern Asia. [*C. COMMUNIS* var. *LUDENS* (Miquel) C. B. Clarke]

COMMELINA DIFFUSA Burman f.—Creeping Dayflower (Figure 8). $2n = 18, 28–60$. Waste places. From the Old World.

TRADESCANTIA BRACTEATA Small—Sticky Spiderwort (Figure 8). $2n = 12, 18, 24$. Roadsides. From farther west.

Tradescantia ohiensis Rafinesque—Smooth Spiderwort (Figure 8). $2n = 12, 24$. Roadsides, waste places, thickets.

Tradescantia virginiana Linnaeus—Widow's Tears (Figure 9). $2n = 12, 18, 24, 24 + 6B$. Roadsides, waste places, thickets.

—*Tradescantia* hybrids—

Tradescantia ohiensis Rafinesque × *TRADESCANTIA SUBASPERA* Ker Gawler—(Figure 9).

Tradescantia ohiensis Rafinesque × *Tradescantia virginiana* Linnaeus—(Figure 9).

DIOSCOREACEAE

DIOSCOREA BATATAS Decaisne—Cinnamon-vine (Figure 9). $2n =$ ca. 140–144. Thickets, waste places. From China.

Dioscorea villosa Linnaeus—Wild Yam (Figure 10). $2n = 60$. Damp thickets, wet woods, roadsides.

ERIOCAULACEAE

Eriocaulon aquaticum (Hill) Druce—White-buttons (Figure 10). $2n = 32, 64$. Acid shores, shallow water, and bogs. [*E. septangulare* Withering]

Eriocaulon parkeri B. L. Robinson—(Figure 10). $2n = 48$. Tidal mud and estuaries.

HAEMODORACEAE

Lachnanthes caroliniana (Lamarck) Dandy—Redroot (Figure 10). $2n = 24, 48$. Sandy or sphagnous pond shores. [*L. tinctoria* (J. F. Gmelin) Elliott]

HYDROCHARITACEAE

EGERIA DENSA Planchon—(Figure 11). $2n = 46, 48$. Ponds. From Brazil and Argentina. [*ELODEA DENSA* (Planchon) Caspary; *ANACHARIS DENSA* (Planchon) Marie-Victorin]

Elodea canadensis Michaux—(Figure 11). $2n = 24, 48$. Ponds, lakes, and quiet streams, mostly basic. [*Anacharis canadensis* (Michaux) Richardson]

Elodea nuttallii (Planchon) St. John—(Figure 11). $2n = 48$. Ponds, lakes, and streams, acidic to moderately basic. [*Anacharis nuttallii* Planchon]

HYDRILLA VERTICILLATA (Linnaeus f.) Royle—(Figure 11). $2n = 16, 24, 32$. Ponds, lakes, and streams. From the Old World.

Vallisneria americana Michaux—Water-celery (Figure 12). $2n = 20$. Ponds and quiet streams.

IRIDACEAE

BELAMCANDA CHINENSIS (Linnaeus) de Candolle—(Figure 12). $2n = 16, 27, 28, 30, 32, 128$. Fields, roadsides, thickets, open woods. From eastern Asia.

CROCUS VERNUS (Linnaeus) J. Hill subsp. *VERNUS*—Dutch

Crocus (Figure 12). $2n$ = 8, 10, 12, 16, 16 + 2B, 18, 19, 20, 22, 23, 32. Grasslands. From Europe.

IRIS CRISTATA Aiton—Dwarf Crested Iris (Figure 12). $2n$ = 24, 32. Rich woods, in acid soils. From farther south and west.

IRIS GERMANICA Linnaeus—Fleur-de-lis (Figure 13). $2n$ = 28, 36–48. Roadsides, waste places. From Europe.

IRIS KAEMPFERI Siebold ex Lemaire—Japanese Iris (Figure 13). $2n$ = 24. Habitat? From Japan.

Iris prismatica Pursh—Slender Blue Flag (Figure 13). $2n$ = 42. Marshes, meadows, swamps, sands, shores, seacoasts.

IRIS PSEUDACORUS Linnaeus—Yellow Iris (Figure 13). $2n$ = 24–34. Swamps, wet meadows, marshes, brooksides, waste places. From Europe.

IRIS PUMILA Linnaeus subsp. *PUMILA*—(Figure 14). $2n$ = 20, 24, 30, 31, 32. Dry rocky knolls. From Eurasia.

Iris setosa Pallas—Beachhead Iris (Figure 14). $2n$ = 34–38. Rocky slopes, upper borders of beaches, moist fields, always near salt water. [*Iris hookeri* Penny ex G. Don]

IRIS SIBIRICA Linnaeus—Siberian Iris (Figure 14). $2n$ = 28. Wet meadows, waste lots. From Eurasia.

IRIS TECTORUM Maximowicz—Wall Iris (Figure 14). $2n$ = 28, 36. Habitat? From China.

Iris versicolor Linnaeus—Blue Flag (Figure 15). $2n$ = 108. Swamps, marshes, meadows, shores, ditches.

—*Iris* hybrids—

Iris prismatica Pursh × *Iris versicolor* Linnaeus—(Figure 15).

Sisyrinchium albidum Rafinesque—(Figure 15). $2n$ = 32, 64. Dry, sandy, open soil and thin woodlands.

Sisyrinchium angustifolium Miller—Stout Blue-eyed Grass (Figure 15). $2n$ = 48. Meadows, fields, low woods, thickets, damp shores. [*S. bermudiana* misapplied; *S. graminoides* Bicknell]

Sisyrinchium atlanticum Bicknell—Eastern Blue-eyed Grass (Figure 16). $2n = 16, 32, 96$. Meadows, marshes, low woods.

Sisyrinchium fuscatum Bicknell—(Figure 16). $2n = 32$. Grasslands, mostly sandy soils. [*S. arenicola* Bicknell]

Sisyrinchium montanum Greene var. *crebrum* Fernald—Common Blue-eyed Grass (Figure 16). $2n = 32, 96$. Fields, meadows, open woods.

Sisyrinchium mucronatum Michaux—Slender Blue-eyed Grass (Figure 16). $2n = 30, 32$. Meadows, fields, sandy places, open woods.

JUNCACEAE

Juncus acuminatus Michaux—(Figure 17). $2n = 40$. Tidal mud flats, salt marsh borders, ditches, shores, meadows.

Juncus alpinoarticulatus Chaix—Alpine Rush (Figure 17). $2n = 40$. Shores, meadows, usually basic. [*J. alpinus* Villars; *J. alpinus* Villars var. *fuscescens* Fernald; *J. alpinus* Villars var. *rariflorus* Hartmann]

Juncus anthelatus (Wiegand) R. E. Brooks—(Figure 17). $2n = 80$. Moist sandy or clay soils. [*J. tenuis* Willdenow var. *anthelatus* Wiegand]

Juncus arcticus Willdenow var. *balticus* (Willdenow) Trautvetter—Wire Rush (Figure 17). $2n = 40, 80$. Sandy shores, sphagnous meadows. [*J. balticus* Willdenow var. *littoralis* Engelmann]

Juncus articulatus Linnaeus—(Figure 18). $2n = 40, 80$. Shores, springy spots, ditches. [*J. articulatus* var. *obtusatus* Engelmann]

Juncus brachycarpus Engelmann—(Figure 18). $2n = 44$. Salt marshes, ocean beaches.

Juncus brachycephalus (Engelmann) Buchenau—(Figure 18). $2n = 80$. Basic shores, marshes, meadows, swamps.

Juncus brevicaudatus (Engelmann) Fernald—(Figure 18). $2n = 80$. Shores, bogs, marshes.

Juncus bufonius Linnaeus—Toad Rush (Figure 19). $2n = 27–37$,

40, ca. 54, 58–81, 106, 108–115, 120. Shores, salt marshes, roadsides, moist to wet borrow pits. [*J. bufonius* var. *halophilus* Buchenau & Fernald]

Juncus canadensis J. Gay—(Figure 19). $2n = 80$. Shores, swamps, marshes, meadows. [*J. canadensis* var. *sparsiflorus* Fernald]

JUNCUS COMPRESSUS Jacques—(Figure 19). $2n = 40, 44$. Disturbed wet ground, especially ditches, roadsides, frequently saline or basic soils. From Europe. [*J. bulbosus* Linnaeus]

Juncus debilis A. Gray—(Figure 19). $2n = ?$. Ditches, pools, shores.

Juncus dichotomus Elliott—(Figure 20). $2n = 80$. Sandy or sphagnous shores, salt marsh borders. [*J. platyphyllus* (Wiegand) Fernald; *J. tenuis* Willdenow var. *dichotomus* (Elliott) A. Wood]

JUNCUS DIFFUSISSIMUS Buckley. $2n = ?$. Disturbed open barrens. From farther south. [Voucher discovered while mss. in press. South Windsor, Hartford County, CT (CONN).]

Juncus dudleyi Wiegand—(Figure 20). $2n = 42, 80$, ca. 84. Shores, boggy meadows, in basic soils. [*J. tenuis* Willdenow var. *dudleyi* (Wiegand) F. J. Hermann]

Juncus effusus Linnaeus—Tufted Rush (Figure 20). $2n = 5, 40, 42$. Marshy ground, low spots. [*J. effusus* var. *compactus* Lejeune & Courtois; *J. effusus* var. *conglomeratus* (Linnaeus) Engelmann; *J. effusus* var. *costulatus* Fernald; *J. effusus* var. *decipiens* Buchenau; *J. effusus* var. *pylaei* (Laharpe) Fernald & Wiegand; *J. effusus* var. *solutus* Fernald & Wiegand; *J. conglomeratus* Linnaeus; *J. pylaei* Laharpe]

Juncus filiformis Linnaeus—(Figure 20). $2n = 40, 70, 80, 84$. Shores, swamps, bogs, alpine meadows.

Juncus gerardii Loiseleur-Deslongchamps—Black Grass (Figure 21). $2n = 80, 84$. Salt marshes. [*J. gerardii* var. *pedicellatus* Fernald]

Juncus greenei Oakes & Tuckerman—(Figure 21). $2n = 80$. Dry

open places, usually well-drained, sandy soil. In pine lands near lake shores, dunes.

JUNCUS INFLEXUS Linnaeus—(Figure 21). $2n = 38, 40$. Meadows, damp roadsides. From Eurasia and northern Africa.

Juncus marginatus Rostkovius—Grass Rush (Figure 21). $2n = 38, 40$. Sandy pond margins, wet meadows. [*J. biflorus* Elliott]

Juncus militaris Bigelow—Bayonet Rush (Figure 22). $2n = ?$. Shallow water of ponds and streams with sandy, gravelly, or sphagnous margins.

Juncus nodosus Linnaeus var. *nodosus*—(Figure 22). $2n = 40$. Shores, marshes, meadows, swamps, especially basic soils.

Juncus pelocarpus E. Meyer—(Figure 22). $2n = 40$. Sandy shores, marshes, ditches.

Juncus secundus Beauvois ex Poiret—(Figure 22). $2n =$ ca. 80. Ledges, dry open sterile soils.

Juncus stygius Linnaeus var. *americanus* Buchenau—(Figure 23). $2n = ?$. Bogs, bog pools.

Juncus subcaudatus (Engelmann) Coville & S. F. Blake—(Figure 23). $2n = ?$. Swamps, bogs, shaded spring-heads, mossy woods.

JUNCUS SUBNODULOSUS Schrank—(Figure 23). $2n = 40$. Salt marsh borders. From Europe. [*J. PERVETUS* Fernald]

Juncus subtilis E. Meyer—Creeping Rush (Figure 23). $2n = 40$. Muddy shores.

Juncus tenuis Willdenow—Path Rush (Figure 24). $2n = 40, 80, 84$. Roadsides, paths. [*J. tenuis* var. *williamsii* Fernald]

JUNCUS TORREYI Coville—(Figure 24). $2n = 40$. Shores, ditches, roadsides. From farther west and south.

Juncus trifidus Linnaeus—Highland Rush (Figure 24). $2n = 20, 30, 40$. Exposed, rocky, or sterile summits. [*J. trifidus* var. *monanthos* (Jacquin) Bluff & Fingerhuth]

Juncus vaseyi Engelmann—(Figure 24). $2n = 42$, ca. 80. Swamps, shores, thickets.

—*Juncus* hybrids—

Juncus articulatus Linnaeus × *Juncus brevicaudatus* (Engelmann) Fernald—(Figure 25).

Juncus brevicaudatus (Engelmann) Fernald × *Juncus nodosus* Linnaeus var. *nodosus*—(Figure 25).

Juncus × *oronensis* Fernald—(Figure 25). Alder swamps, thickets. [*J. tenuis* Willdenow × *J. vaseyi* Engelmann ?]

Juncus secundus Beauvois ex Poiret × *Juncus tenuis* Willdenow—(Figure 25).

Juncus tenuis Willdenow × *Juncus vaseyi* Engelmann—(Figure 26).

Luzula acuminata Rafinesque var. *acuminata*—(Figure 26). $2n$ = 18. Thickets, clearings, woods.

Luzula acuminata Rafinesque var. *carolinae* (S. Watson) Fernald—$2n$ = 18. Limy wooded slopes. [Reported (Flora of North America, in press); no voucher seen.]

Luzula bulbosa (Wood) Rydberg—(Figure 26). $2n$ = 12. Dry, sandy, open woods and fields.

LUZULA CAMPESTRIS (Linnaeus) de Candolle—(Figure 26). $2n$ = 12, 12 + 1B, 13, 14, 16. Lawns. From Europe.

Luzula confusa Lindeberg—Northern Woodrush (Figure 27). $2n$ = 36, 44–48. Alpine areas.

Luzula echinata (Small) Hermann—(Figure 27). $2n$ = 12. Woods, thickets, clearings. [*L. campestris* (Linnaeus) de Candolle var. *echinata* (Small) Fernald & Wiegand]

LUZULA LUZULOIDES (Lamarck) Dandy & Wilmott subsp. *LUZULOIDES*—Forest Woodrush (Figure 27). $2n$ = 12. Rocky woods, roadsides, lawns. From Europe.

Luzula multiflora (Ehrhart) Lejeune subsp. *multiflora*—Common Woodrush (Figure 27). $2n$ = 12, 24, 28, 36. Open woods, dry fields, meadows. [*L. multiflora* var. *acadiensis* Fernald; *L. campestris* (Linnaeus) de Candolle var. *multiflora* (Ehrhart) Čelakovský]

Luzula multiflora (Ehrhart) Lejeune subsp. *frigida* (Buchenau)

Kreczetowicz—(Figure 28). $2n = 36$. Sphagnous barrens, clearings, fields. [*L. multiflora* var. *fusconigra* Čelakovský]

LUZULA PALLIDULA Kirschner—(Figure 28). $2n = 12–18$. Meadows, open woods, clearings, rocky places. From Eurasia. [*L. pallescens* (Wahlenberg) Besser]

Luzula parviflora (Ehrhart) Desvaux var. *melanocarpa* (Michaux) Buchenau—(Figure 28). $2n = 24$. Mossy wooded banks, dry woods, damp thickets, often rocky places.

Luzula spicata (Linnaeus) de Candolle—Alpine Woodrush (Figure 28). $2n = 12, 14, 18, 24, 36$. Alpine areas.

JUNCAGINACEAE

Triglochin gaspense Lieth & D. Löve—(Figure 29). $2n = 96$. Salt marshes.

Triglochin maritima Linnaeus—(Figure 29). $2n = 12, 24, 30, 36, 48, 96, 120$. Salt, brackish, and freshwater marshes.

Triglochin palustre Linnaeus—(Figure 29). $2n = 24, 28, 36$. Salt marshes and river shores.

LEMNACEAE

Lemna minor Linnaeus—(Figure 29). $2n = 20, 30, 40, 42, 50, 63, 80, 126$. Floating on quiet water of ponds and streams, muddy shores.

Lemna perpusilla Torrey—(Figure 30). $2n = 20, 40, 42, 50, 60, 80$. Floating on quiet water of ponds and streams.

Lemna trisulca Linnaeus—(Figure 30). $2n = 20, 40, 42, 44, 56–60, 63, 80$. Surface of quiet often basic water of ponds and streams.

Lemna turionifera Landolt—(Figure 30). $2n = 40, 42, 50, 80$. Quiet waters.

Lemna valdiviana Philippi—(Figure 30). $2n = 36, 40, 42$. Quiet waters or swift currents of streams.

Spirodela polyrrhiza (Linnaeus) Schleiden—Water Flaxseed (Fig-

ure 31). $2n$ = 30, 32, 38, 40, 50, 80. Surface of quiet water of lakes, ponds, ditches, and streams; muddy shores.

SPIRODELA PUNCTATA (G. F. W. Meyer) C. H. Thompson—$2n$ = 40, 43–44, 46, 50. Quiet waters. From subtropical regions. [*S. OLIGORRHIZA* (Kurtz) Hegelmaier; reported from Massachusetts (Flora of North America, in press); no voucher seen]

Wolffia borealis (Engelmann ex Hegelmaier) Landolt—(Figure 31). $2n$ = 20, 22, 30, 40. Floating on quiet waters of ditches, ponds, lakes, and streams. [*W. punctata* misapplied]

WOLFFIA BRASILIENSIS Weddell—(Figure 31). $2n$ = 20, 40, 42, 50, 60, 80. Floating on quiet waters. From farther south. [*W. PAPULIFERA* C. H. Thompson]

Wolffia columbiana Karsten—(Figure 31). $2n$ = 30, 40, 42, 50, 70. Quiet mostly basic waters of lakes, ponds, ditches, and streams.

Wolffiella gladiata (Hegelmaier) Hegelmaier—(Figure 32). $2n$ = 40, 42. Quiet acidic waters. [*W. floridana* (J. D. Smith) C. H. Thompson]

LILIACEAE

Note: The Liliaceae are here treated mostly in their traditional sense with the understanding that numerous smaller families will be recognized within the very near future.

Aletris farinosa Linnaeus—Unicorn-root (Figure 32). $2n$ = 26. Moist, open, sandy soil and barrens.

Allium canadense Linnaeus var. *canadense*—Wild Garlic (Figure 32). $2n$ = 14, 21, 28, 82. Low woods, alluvial thickets, meadows.

ALLIUM CEPA Linnaeus—Onion (Figure 32). $2n$ = 14, 16, 28, 32, 64. Waste ground. From southwest Asia.

ALLIUM OLERACEUM Linnaeus—Wild Onion (Figure 33). $2n$ = 24, 32, 40, 48. Wood borders, thickets, roadside banks. From Europe.

ALLIUM SATIVUM Linnaeus—Garlic (Figure 33). $2n = 12, 16$. Roadsides, pastures, fields. From western Asia.

Allium schoenoprasum Linnaeus—Chives (Figure 33). $2n = 16$, 16 + (1–18)B, 24, 32. Gravelly and rocky shores. [*A. schoenoprasum* var. *sibiricum* (Linnaeus) Hartman]

Allium tricoccum Aiton var. *tricoccum*—Wild Leek (Figure 33). $2n = 16$. Rich basic woods and bottoms.

Allium tricoccum Aiton var. *burdickii* Hanes—(Figure 34). $2n = 16$. Dry soil in upland woods.

ALLIUM VINEALE Linnaeus—Field Garlic (Figure 34). $2n = 16$, 32, 32 + (0–2)s, 40. Dry grasslands, fallow fields, lawns, waste places. From Europe.

ASPARAGUS OFFICINALIS Linnaeus—Asparagus (Figure 34). $2n = 20, 40$. Roadsides, near buildings, fields, fence rows. From Europe.

Chamaelirium luteum (Linnaeus) Gray—Blazing-star (Figure 34). $2n = ?$. Meadows, thickets, rich woods.

Clintonia borealis (Aiton) Rafinesque—Yellow Clintonia (Figure 35). $2n = 28$, 28 + 2B, 32. Woods, usually moist, thickets.

COLCHICUM AUTUMNALE Linnaeus—Autumn Crocus (Figure 35). $2n = 36, 38, 42$. Meadows, fields. From Europe.

CONVALLARIA MAJALIS Linnaeus var. *MAJALIS*—European Lily-of-the-Valley (Figure 35). $2n = 36, 38$. Roadsides, old house sites, thickets, open woods. From Europe.

Erythronium americanum Ker—Trout Lily (Figure 35). $2n = 48$. Rich moist woods and thickets.

GALANTHUS NIVALIS Linnaeus subsp. *NIVALIS*—Snowdrop (Figure 36). $2n = 18, 24$, 24 + (1–10)B, 26. Abandoned gardens. From Europe.

HEMEROCALLIS FULVA (Linnaeus) Linnaeus—Orange Day-lily (Figure 36). $2n = 22, 33, 36$. Roadsides, waste places. From Asia.

HEMEROCALLIS LILIOASPHODELUS Linnaeus—Yellow Day-lily (Figure 36). $2n = 22$. Roadsides, waste places. From Asia. [*H. FLAVA* (Linnaeus) Linnaeus]

HOSTA LANCIFOLIA Trattinnick—(Figure 36). $2n = 60$. Thickets, roadsides, waste places. From eastern Asia. [*H. JAPONICA* Voss]

HOSTA VENTRICOSA (Salisbury) Stearn—Blue Plantain-lily (Figure 37). $2n = 60, 120$. Rich woods along streams, moist banks. From eastern Asia.

Hypoxis hirsuta (Linnaeus) Coville—Common Stargrass (Figure 37). $2n = 28$. Open woods, fields.

LEUCOJUM AESTIVUM Linnaeus—Summer Snowflake (Figure 37). $2n = 22, 24$. Meadows, low woods. From Europe.

Lilium canadense Linnaeus—Canada Lily (Figure 37). $2n = 24$. Meadows, low woods, thickets.

LILIUM LANCIFOLIUM Thunberg—Tiger Lily (Figure 38). $2n = 24, 36$. Old house sites, roadsides, dry thickets. From eastern Asia. [*L. TIGRINUM* Ker]

Lilium philadelphicum Linnaeus—Wood Lily (Figure 38). $2n = 24$. Dry open woods, thickets, clearings.

Lilium superbum Linnaeus—Turk's-cap Lily (Figure 38). $2n = 24$. Meadows, damp thickets, swampy woods.

Maianthemum canadense Desfontaines—Canada Mayflower (Figure 38). $2n = 36$. Woods, clearings. [*M. canadense* var. *interius* Fernald]

Maianthemum racemosum (Linnaeus) Link subsp. *racemosum*—False Solomon's-seal (Figure 39). $2n = 36, 72, 144$. Woods, clearings. [*Smilacina racemosa* (Linnaeus) Desfontaines; *Smilacina racemosa* (Linnaeus) Desfontaines var. *cylindrata* Fernald]

Maianthemum stellatum (Linnaeus) Link—(Figure 39). $2n = 36, 54$. Sandy soil of shores, hillsides, fields, thickets. [*Smilacina stellata* (Linnaeus) Desfontaines; *Smilacina stellata* (Linnaeus) Desfontaines var. *crassa* Victorin]

Maianthemum trifolium (Linnaeus) Sloboda—(Figure 39). $2n = 36$. Sphagnum bogs, sphagnous shores and woods. [*Smilacina trifolia* (Linnaeus) Desfontaines]

Medeola virginiana Linnaeus—Indian Cucumber Root (Figure 39). $2n = 14$. Rich woods.

MUSCARI BOTRYOIDES (Linnaeus) Miller—Grape-hyacinth (Figure 40). $2n = 18, 36$, ca. 40, 48. Pastures, fields, roadsides, waste places. From Europe.

MUSCARI NEGLECTUM Gussone ex Tenore—Blue-bottle (Figure 40). $2n = 18–72$. Fields, roadsides, lawns, waste places. From Europe. [*M. ATLANTICUM* Boissier & Reuter; *M. RACEMOSUM* Lamarck & de Candolle]

NARCISSUS POETICUS Linnaeus—Poet's Narcissus (Figure 40). $2n = 14, 21, 28$. Fields, moist meadows. From Europe.

NARCISSUS PSEUDONARCISSUS Linnaeus—Daffodil (Figure 40). $2n = 14, 14 + (1–2)B, 15, 21, 26–30, 35, 43$. Fields, open groves, moist meadows. From Europe.

ORNITHOGALUM NUTANS Linnaeus—(Figure 41). $2n = 14, 15, 40, 41, 45$. Low meadows, fields. From western Asia.

ORNITHOGALUM UMBELLATUM Linnaeus—Star-of-Bethlehem (Figure 41). $2n = 18–108$. Old house sites, roadsides, thickets, fields, meadows. From Europe.

Polygonatum biflorum (Walter) Elliott var. *biflorum*—Great Solomon's-seal (Figure 41). $2n = 20, 40$. Rocky woods.

Polygonatum biflorum (Walter) Elliott var. *commutatum* (J. A. & J. H. Schultes) Morong—Giant Solomon's-seal (Figure 41). $2n = 40$. Rich woods, alluvial thickets, riverbanks, hedgerows. [*P. canaliculatum* misapplied; *P. commutatum* (J. A. & J. H. Schultes) A. Dietrich]

POLYGONATUM LATIFOLIUM (Jacquin) Desfontaines—(Figure 42). $2n = 18, 20$. Roadside thickets. From Europe.

Polygonatum pubescens (Willdenow) Pursh—Small Solomon's-seal (Figure 42). $2n = 20$. Dry-to-rich woods.

SCILLA SIBERICA Haworth ex Andrews—(Figure 42). $2n = 12, 12 + B, 12 + 4B, 18, 24, 30$. Roadsides, pastures. From Eurasia.

Streptopus amplexifolius (Linnaeus) de Candolle—Twisted Stalk

(Figure 42). $2n = 16, 32$. Rich damp woods and thickets. [*S. amplexifolius* var. *americanus* Schultes]

Streptopus lanceolatus (Aiton) Reveal—Rose Mandarin (Figure 43). $2n = 16, 48$. Rich, damp, cool woods and thickets. [*S. roseus* Michaux var. *longipes* (Fernald) Fassett; *S. roseus* Michaux var. *perspectus* Fassett]

—*Streptopus* hybrids—

Streptopus × *oreopolus* Fernald—(Figure 43). $2n = 24$. Subalpine woods and meadows. [*S. amplexifolius* (Linnaeus) de Candolle × *S. lanceolatus* (Aiton) Reveal; *S. amplexifolius* (Linnaeus) de Candolle var. *oreopolus* (Fernald) Fassett]

Tofieldia glutinosa (Michaux) Persoon—(Figure 43). $2n = 30$. Marshes (basic), bogs, shores.

TRICYRTIS HIRTA (Thunberg) Hooker—Toad Lily (Figure 43). $2n = 24, 26, 37$. Open woods. From eastern Asia.

Trillium cernuum Linnaeus—Nodding Trillium (Figure 44). $2n = 10$. Rich damp woods, most often in acid soil. [*T. cernuum* var. *macranthum* A. J. Eames & Wiegand]

Trillium erectum Linnaeus—Purple Trillium (Figure 44). $2n = 10$. Rich woods. [*T. erectum* var. *blandum* Jennison]

Trillium grandiflorum (Michaux) Salisbury—Snowy Trillium (Figure 44). $2n = 10$. Rich usually basic woods and thickets.

Trillium undulatum Willdenow—Painted Trillium (Figure 44). $2n = 10$. Rich usually wet woods in acidic soils.

TULIPA GESNERIA Linnaeus—Garden Tulip (Figure 45). $2n = 24, 25, 26, 36, 48$. Waste areas. From Eurasia.

TULIPA SYLVESTRIS Linnaeus—(Figure 45). $2n = 24, 48$. Meadows. From Europe.

Uvularia grandiflora J. E. Smith—Big Merry-bells (Figure 45). $2n = 14$. Rich moist woods and thickets, chiefly basic.

Uvularia perfoliata Linnaeus—Perfoliate Bellwort (Figure 45). $2n = 14$. Rich usually dry woods and thickets, preferring acid soils.

Uvularia sessilifolia Linnaeus—Wild-oats (Figure 46). $2n = 14$. Woods, thickets, clearings.

Veratrum viride Aiton—White Hellebore (Figure 46). $2n = 32$. Swampy woods, wet meadows.

Zigadenus elegans Pursh var. *glaucus* (Nuttall) Preece—White Camass (Figure 46). $2n = 32$. Basic gravel, cliffs, shores, bogs. [*Z. glaucus* Nuttall]

NAJADACEAE

Najas flexilis (Willdenow)—Northern Water-nymph (Figure 46). $2n = 24$. Quiet shallow water of ponds and streams, usually rooting in mud.

Najas gracillima (A. Braun ex Engelmann) Magnus—(Figure 47). $2n = 12$. Muddy, sandy, or sphagnous ponds and shores.

Najas guadalupensis (Sprengel) Magnus subsp. *guadalupensis*—Southern Water-nymph (Figure 47). $2n = 12, 36, 48, 54, 60$. Ponds and streams.

Najas guadalupensis (Sprengel) Magnus subsp. *olivacea* (Rosendahl & Butters) R. R. Haynes & Hellquist—(Figure 47). $2n = ?$. Habitat? [*N. olivacea* Rosendahl & Butters]

NAJAS MINOR Allioni—(Figure 47). $2n = 12, 24, 46, 56$. Quiet basic water of lakes and streams. From the Old World.

ORCHIDACEAE

Amerorchis rotundifolia (Banks) Hultén—Small Round-leaved Orchis (Figure 48). $2n = 42$. Bogs, swamps, boggy woods, in basic soil. [*Orchis rotundifolia* Banks]

Aplectrum hyemale (Muhlenberg ex Willdenow) Nuttall—Putty-root (Figure 48). $2n = ?$. Rich rocky woods.

Arethusa bulbosa Linnaeus—Arethusa (Figure 48). $2n = 40$. Sphagnous bogs, meadows, and swamps.

Calopogon tuberosus (Linnaeus) Britton, Sterns & Poggenberg—Grass-pink (Figure 48). $2n = 26, 42$. Sphagnous bogs, swamps, and meadows. [*C. pulchellus* (Salisbury) R. Brown]

Calypso bulbosa (Linnaeus) Oakes var. *americana* (R. Brown ex Aiton f.) Luer—Calypso (Figure 49). $2n = 28$. *Thuja* swamps.

Coeloglossum viride (Linnaeus) Hartman var. *virescens* (Muhlenberg ex Willdenow) Luer—Bracted Orchis (Figure 49). $2n = 40, 42$. Rich moist woods, thickets, meadows. [*Habenaria viridis* (Linnaeus) R. Brown var. *bracteata* (Muhlenberg) A. Gray]

Corallorhiza maculata (Rafinesque) Rafinesque—Spotted Coral-root (Figure 49). $2n = 42, 84$. Dry-to-moist woods.

Corallorhiza odontorhiza (Willdenow) Poiret—Autumn Coral-root (Figure 49). $2n = ?$. Rich dry woods, in basic soil.

Corallorhiza trifida Chatelain—Early Coral-root (Figure 50). $2n = 38, 40, 42$. Rich wet woods, swamps with *Thuja*. [*C. trifida* var. *verna* (Nuttall) Fernald]

Cypripedium acaule Aiton—Pink Lady's-slipper (Figure 50). $2n = 20$. Dry woods, acid soils.

Cypripedium arietinum R. Brown—Ram's-head Lady's-slipper (Figure 50). $2n = 20$. Rich damp woods, usually on hillsides, usually acid soils in coniferous woods.

Cypripedium parviflorum Salisbury var. *parviflorum*—Small Yellow Lady's-slipper (Figure 50). $2n = 20$. Rich usually swampy basic woods, bogs (chiefly basic), shores. [*C. calceolus* Linnaeus var. *parviflorum* (Salisbury) Fernald]

Cypripedium parviflorum Salisbury var. *makasin* (Farwell) Sheviak. $2n = ?$. *Thuja* bogs and fens. [There are no distribution data for this relatively newly described taxon since it is not yet distinguished in New England herbaria. The author of this combination reports that "Virtually everything reported from NE as var. *parviflorum* is in fact var. *makasin*" (pers. comm.).]

Cypripedium parviflorum Salisbury var. *pubescens* (Willdenow) Knight—Large Yellow Lady's-slipper (Figure 51). $2n = 20$. Rich woodlands. [*C. calceolus* Linnaeus var. *pubescens* (Willdenow) Correll]

Cypripedium reginae Walter—Showy Lady's-slipper (Figure 51). $2n = 20$. Bogs, swamps, swampy woods, in basic soils.

EPIPACTIS HELLEBORINE (Linnaeus) Crantz—Helleborine (Figure 51). $2n = 36–44$. Woods, thickets, roadsides. From Europe.

Galearis spectabilis (Linnaeus) Rafinesque—Showy Orchis (Figure 51). $2n = 42$. Rich woods, mostly in basic soils. [*Orchis spectabilis* Linnaeus]

Goodyera oblongifolia Rafinesque—Giant Rattlesnake-plantain (Figure 52). $2n = 22, 30$. Dry coniferous and mixed woods.

Goodyera pubescens (Willdenow) R. Brown—Downy Rattlesnake-plantain (Figure 52). $2n = 26$. Dry-to-moist woods.

Goodyera repens (Linnaeus) R. Brown var. *ophioides* Fernald—Dwarf Rattlesnake-plantain (Figure 52). $2n = 30, 40$. Damp mossy woods, especially under conifers.

—*Goodyera* hybrids—

Goodyera × *tesselata* Loddiges—(Figure 52). $2n = 59–61$. Rich woods, often pine. [*G. oblongifolia* Rafinesque × *G. repens* (Linnaeus) R. Brown var. *ophioides* Fernald]

Isotria medeoloides (Pursh) Rafinesque—Small Whorled Pogonia (Figure 53). $2n = 18$. Open second growth, rich woods, often near *Fagus*.

Isotria verticillata (Muhlenberg ex Willdenow) Rafinesque—Large Whorled Pogonia (Figure 53). $2n = 18$. Acidic woods, usually damp, often with *Medeola*.

Liparis liliifolia (Linnaeus) Richard ex Lindley—Large Twayblade (Figure 53). $2n = ?$. Rich moist woods.

Liparis loeselii (Linnaeus) Richard—Loesel's Twayblade (Figure 53). $2n = 26, 32$. Swamps, bogs, damp thickets, sphagnous meadows, ditches.

Listera auriculata Wiegand—Auricled Twayblade (Figure 54). $2n = ?$. Moist woods and thickets.

Listera australis Lindley—Southern Twayblade (Figure 54). $2n = ?$. Sphagnous thickets and bogs.

Listera convallarioides (Swartz) Elliott—Broad-lipped Tway-

blade (Figure 54). $2n = 36$. Wet or swampy woods, often with *Thuja*, shores.

Listera cordata (Linnaeus) R. Brown—Heartleaf Twayblade (Figure 54). $2n = 34, 34 + (1–9)B, 36–42, 44$. Mossy knolls in wet woods.

Malaxis bayardii Fernald—(Figure 55). $2n = ?$. Dry sandy woods and clearings.

Malaxis monophyllos (Linnaeus) Swartz var. *brachypoda* (A. Gray) F. Morris & Eames—(Figure 55). $2n = 28, 30$. *Thuja* swamps and thickets. [*M. brachypoda* (A. Gray) Fernald]

Malaxis unifolia Michaux—Green Adder's-mouth (Figure 55). $2n = ?$. Woods, borders of swamps or bogs.

Platanthera blephariglottis (Willdenow) Lindley var. *blephariglottis*—White Fringed Orchis (Figure 55). $2n = 42$. Sphagnum bogs, wet sphagnous soil. [*Habenaria blephariglottis* (Willdenow) Hooker]

Platanthera ciliaris (Linnaeus) Lindley—Yellow Fringed Orchis (Figure 56). $2n = ?$. Swampy woods, wet thickets, bogs. [*Habenaria ciliaris* (Linnaeus) R. Brown]

Platanthera clavellata (Michaux) Luer—Green Woodland Orchis (Figure 56). $2n = 42$. Swampy woods, bogs, spring-heads, shores, typically sphagnous. [*Habenaria clavellata* (Michaux) Sprengel; *H. clavellata* var. *ophioglossoides* Fernald]

Platanthera cristata (Michaux) Lindley—Crested Yellow Orchis (Figure 56). $2n = ?$. Damp acid woods, low moist meadows. [*Habenaria* cristata (Michaux) R. Brown]

Platanthera dilatata (Pursh) Lindley ex Beck var. *dilatata*—Bog Candle (Figure 56). $2n = 42$. Springy woods, bogs, shores, meadows. [*Habenaria dilatata* (Pursh) Hooker]

Platanthera flava (Linnaeus) Lindley var. *herbiola* (R. Brown ex Aiton f.) Luer—Tubercled Orchis (Figure 57). $2n = 42$. Springy meadows, shores. [*Habenaria flava* (Linnaeus) R. Brown var. *herbiola* (R. Brown) Ames & Correll]

Platanthera grandiflora (Bigelow) Lindley—Large Purple Fringed Orchis (Figure 57). $2n = 42$. Rich swampy woods,

spring-heads, along streams, thickets. [*Habenaria fimbriata* (Aiton) R. Brown; *H. psycodes* (Linnaeus) Sprengel var. *grandiflora* (Bigelow) A. Gray]

Platanthera hookeri (Torrey ex A. Gray)—Hooker's Orchis (Figure 57). $2n = 42$. Rich dry woods. [*Habenaria hookeri* Torrey]

Platanthera hyperborea (Linnaeus) Lindley—Northern Green Orchis (Figure 57). $2n = 42, 84, 84 \pm 1$. Springy woods, sphagnum bogs, ditches. [*P. hyperborea* var. *huronensis* (Nuttall) Luer; *Habenaria hyperborea* (Linnaeus) R. Brown; *H. hyperborea* (Linnaeus) R. Brown var. *huronensis* (Nuttall) Farwell]

Platanthera lacera (Michaux) G. Don—Ragged Orchis (Figure 58). $2n = 42$. Meadows, damp fields, alluvial or wet woods. [*Habenaria lacera* (Michaux) Loddiges]

Platanthera leucophaea (Nuttall) Lindley—Prairie Fringed Orchis (Figure 58). $2n = 42$. Bogs, open tamarack swamps. [*Habenaria leucophaea* (Nuttall) A. Gray]

Platanthera obtusata (Banks ex Pursh) Lindley—Blunt-leaf Orchis (Figure 58). $2n = 42$. Sphagnum bogs, damp woods, especially coniferous or mixed. [*Habenaria obtusata* (Banks ex Pursh) Richards]

Platanthera orbiculata (Pursh) Lindley var. *orbiculata*—Round-leaved Orchis (Figure 58). $2n = 42$. Rich woods. [*Habenaria orbiculata* (Pursh) Torrey]

Platanthera orbiculata (Pursh) Lindley var. *macrophylla* (Goldie) Luer—(Figure 59). $2n = ?$. Rich woods. [*Habenaria macrophylla* Goldie; *H. orbiculata* (Pursh) Torrey var. *macrophylla* (Goldie) B. Boivin]

Platanthera psycodes (Linnaeus) Lindley—Small Purple Fringed Orchis (Figure 59). $2n = 42$. Wet woods, damp thickets, along streams. [*Habenaria psycodes* (Linnaeus) Sprengel]

—*Platanthera* hybrids—

Platanthera × *andrewsii* (M. White) Luer—(Figure 59). $2n = 42$. [*P. lacera* (Michaux) G. Don × *P. psycodes* (Linnaeus) Lindley]

Platanthera grandiflora (Bigelow) Lindley × *Platanthera hyperborea* (Linnaeus) Lindley—(Figure 59).

Platanthera grandiflora (Bigelow) Lindley × *Platanthera lacera* (Michaux) G. Don—(Figure 60).

Platanthera × *media* (Rydberg) Luer—(Figure 60). [*P. dilatata* (Pursh) Lindley ex Beck var. *dilatata* × *P. hyperborea* (Linnaeus) Lindley]

Pogonia ophioglossoides (Linnaeus) Ker—Rose Pogonia (Figure 60). $2n = 18$. Sphagnum bogs, swamps, wet meadows, pond shores, sphagnous thickets.

Spiranthes casei Catling & Cruise—(Figure 60). $2n = 60, 75$. Sandy acid soils, roadsides, fields.

Spiranthes cernua (Linnaeus) Richard—Nodding Ladies'-tresses (Figure 61). $2n = 30, 45$, ca. 50, 60, 61. Damp banks, meadows, bogs, shores, low thickets, open moist sandy places.

Spiranthes lacera (Rafinesque) Rafinesque var. *lacera*—Northern Slender Ladies'-tresses (Figure 61). $2n = 30$. Open sandy places.

Spiranthes lacera (Rafinesque) Rafinesque var. *gracilis* (Bigelow) Luer—Southern Slender Ladies'-tresses (Figure 61). $2n = 30$. Sterile open soils, thickets, and open woods. [*S. gracilis* (Bigelow) Beck]

Spiranthes lucida (H. H. Eaton) Ames—(Figure 61). $2n = 44$. Damp rocky shores, meadows, rich damp thickets, usually in basic soils.

Spiranthes ochroleuca (Rydberg) Rydberg—(Figure 62). $2n = 30$. Sterile fields, dry barrens, rocky slopes, open woods, roadsides. [*S. cernua* (Linnaeus) Richard var. *ochroleuca* (Rydberg) Ames]

Spiranthes romanzoffiana Chamisso—Hooded Ladies'-tresses (Figure 62). $2n = 30, 44, 60$. Swampy places, often along rivers and ponds, thickets.

Spiranthes tuberosa Rafinesque—Little Ladies'-tresses (Figure 62). $2n = ?$. Dry sandy fields, woodland borders, cemeteries, roadsides. [*S. tuberosa* var. *grayi* (Ames) Fernald]

Spiranthes vernalis Engelmann & A. Gray—Spring Ladies'-tresses (Figure 62). $2n = 30$. Grasslands, sandy fields, clearings.

—*Spiranthes* hybrids—

Spiranthes × *intermedia* Ames—(Figure 63). [*S. lacera* (Rafinesque) Rafinesque var. *lacera* × *S. vernalis* Engelmann & A. Gray]

Spiranthes lacera (Rafinesque) Rafinesque var. *lacera* × *Spiranthes romanzoffiana* Chamisso—(Figure 63).

Spiranthes lacera (Rafinesque) Rafinesque var. *gracilis* (Bigelow) Luer × *Spiranthes tuberosa* Rafinesque—(Figure 63).

Tipularia discolor (Pursh) Nuttall—Crane-fly Orchid (Figure 63). $2n = ?$. Rich, damp, oak-holly-beech woods.

Triphora trianthophora (Swartz) Rydberg subsp. *trianthophora*—Nodding Pogonia (Figure 64). $2n = 44$. Deep humus of rich moist woods with *Fagus*, often on rotten logs.

PONTEDERIACEAE

EICHHORNIA CRASSIPES (Martius) Solms-Laubach—Water-hyacinth (Figure 64). $2n = 30, 32, 58$. Floating in ponds and quiet streams. From South America.

Heteranthera dubia (Jacquin) MacMillan—Water Stargrass (Figure 64). $2n = 30$. Shallow, quiet, basic water. [*Zosterella dubia* (Jacquin) Small]

Heteranthera reniformis Ruiz & Pavón—(Figure 64). $2n = 48$. Muddy river shores (in mud or floating in shallow water).

Pontederia cordata Linnaeus—Pickerelweed (Figure 65). $2n = 16$. Shallow water of ponds, lakes, and river shores, rooting in mud.

POTAMOGETONACEAE

Potamogeton alpinus Balbis—Red Pondweed (Figure 65). $2n = 26, 52$. Slow-moving streams, shallow water of ponds and

lakes. [*P. alpinus* var. *subellipticus* (Fernald) Ogden; *P. alpinus* var. *tenuifolius* (Rafinesque) Ogden]

Potamogeton amplifolius Tuckerman—(Figure 65). $2n = 52$. Deep water of lakes and river coves.

Potamogeton bicupulatus Fernald—(Figure 65). $2n = ?$. Acidic shallow water of rivers and ponds. [*P. diversifolius* Rafinesque var. *trichophyllus* Morong; *P. capillaceus* Poiret]

Potamogeton confervoides Reichenbach—Alga Pondweed (Figure 66). $2n = ?$. Acidic sandy or sphagnous ponds, mountain pools, and lakes.

POTAMOGETON CRISPUS Linnaeus—Curly Pondweed (Figure 66). $2n = 26, 36, 42, 50, 52, 72, 78$. Shallow basic or brackish water. From Europe.

Potamogeton diversifolius Rafinesque—Common Snailseed Pondweed (Figure 66). $2n = ?$. Acidic shallow water. [*P. capillaceus* Poiret]

Potamogeton epihydrus Rafinesque—Ribbonleaf Pondweed (Figure 66). $2n = 26$. Shallow quiet and moving water. [*P. epihydrus* var. *nuttallii* (Chamisso & Schlechtendahl) Fernald; *P. epihydrus* var. *ramosus* (Peck) House]

Potamogeton foliosus Rafinesque subsp. *foliosus*—Leafy Pondweed (Figure 67). $2n = 26, 28$. Basic still water of ponds, lakes, and streams. [*P. foliosus* var. *macellus* Fernald]

Potamogeton friesii Ruprecht—(Figure 67). $2n = 26$. Alkaline deep water of lakes and ponds.

Potamogeton gramineus Linnaeus—(Figure 67). $2n = 52$. Shallow water. [*P. gramineus* var. *maximus* Morong; *P. gramineus* var. *myriophyllus* Robbins]

Potamogeton hillii Morong—(Figure 67). $2n = 26$. Alkaline water of ponds and streams.

Potamogeton illinoensis Morong—(Figure 68). $2n = 104$. Alkaline water of ponds and streams.

Potamogeton natans Linnaeus—Floating Pondweed (Figure 68). $2n = 42, 52$. Ponds and slow streams.

Potamogeton nodosus Poiret—Longleaf Pondweed (Figure 68). $2n = 52$. Streams.

Potamogeton oakesianus Robbins—Oakes Pondweed (Figure 68). $2n = ?$. Acidic ponds and lakes.

Potamogeton obtusifolius Mertens & Koch—(Figure 69). $2n = 26$. Quiet basic water, usually cold.

Potamogeton ogdenii Hellquist & R. L. Hilton—Ogden's Pondweed (Figure 69). $2n = ?$. Basic water of ponds and lakes.

Potamogeton perfoliatus Linnaeus—Redhead-grass (Figure 69). $2n = 14$, ca. 40, 52, 78. Shallow water. [*P. perfoliatus* var. *bupleuroides* (Fernald) Farwell]

Potamogeton praelongus Wulfen—White-stem Pondweed (Figure 69). $2n = 52$. Moderately alkaline still water, usually deep.

Potamogeton pulcher Tuckerman—Spotted Pondweed (Figure 70). $2n = ?$. Acidic shallow water of ponds and muddy shores.

Potamogeton pusillus Linnaeus subsp. *pusillus*—(Figure 70). $2n = 26$. Alkaline water of ponds and streams. [*P. pusillus* var. *minor* (Bivona-Bivardi) Fernald & B. G. Schubert]

Potamogeton pusillus Linnaeus subsp. *gemmiparus* (Robbins) R. R. Haynes & Hellquist—(Figure 70). $2n = 26$. Quiet acidic water of ponds and streams. [*P. gemmiparus* (Robbins) Robbins ex Morong]

Potamogeton pusillus Linnaeus subsp. *tenuissimus* (Mertens & Koch) R. R. Haynes & Hellquist—(Figure 70). $2n = 26$. Quiet shallow water of ponds and streams. [*P. berchtoldii* Fieber; *P. berchtoldii* Fieber var. *acuminatus* Fieber; *P. berchtoldii* Fieber var. *lacunatus* (Hagström) Fernald; *P. berchtoldii* Fieber var. *polyphyllus* (Morong) Fernald; *P. berchtoldii* Fieber var. *tenuissimus* (Mertens & Koch) Fernald]

Potamogeton richardsonii (A. Bennett) Rydberg—Redhead Pondweed (Figure 71). $2n = 26$, 52. Alkaline water of lakes and streams.

Potamogeton robbinsii Oakes—Fern Pondweed (Figure 71). $2n = 52$. Ponds, lakes, and slow streams.

Potamogeton spirillus Tuckerman—Northern Snailseed Pondweed (Figure 71). $2n$ = ?. Neutral-to-acidic quiet water of ponds and streams.

Potamogeton strictifolius A. Bennett—(Figure 71). $2n$ = 52. Alkaline water of lakes and slow streams. [*P. strictifolius* var. *rutiloides* Fernald]

Potamogeton vaseyi Robbins—Vasey's Pondweed (Figure 72). $2n$ = 28. Quiet water of ponds and streams, of low-to-moderate alkalinity. [*P. lateralis* Morong]

Potamogeton zosteriformis Fernald—Flatstem Pondweed (Figure 72). $2n$ = 52. Quiet often alkaline water of ponds and slow streams.

—*Potamogeton* hybrids—

Potamogeton alpinus Balbis × *Potamogeton epihydrus* Rafinesque—(Figure 72).

Potamogeton amplifolius Tuckerman × *Potamogeton illinoensis* Morong—(Figure 72).

Potamogeton amplifolius Tuckerman × *Potamogeton praelongus* Wulfen—(Figure 73).

Potamogeton × *argutulus* Hagström—(Figure 73). [*P. gramineus* Linnaeus × *P. nodosus* Poiret]

Potamogeton × *faxonii* Morong—(Figure 73). [*P. illinoensis* Morong × *P. nodosus* Poiret]

Potamogeton × *haynesii* Hellquist & G. E. Crow—(Figure 73). [*P. strictifolius* A. Bennett × *P. zosteriformis* Fernald; *P. longiligulatus* misapplied]

Potamogeton illinoensis Morong × *Potamogeton perfoliatus* Linnaeus—(Figure 74).

Potamogeton illinoensis Morong × *Potamogeton richardsonii* (A. Bennett) Rydberg—(Figure 74).

Potamogeton × *mysticus* Morong—(Figure 74). [*P. perfoliatus* Linnaeus × *P. pusillus* Linnaeus subsp. *tenuissimus* (Mertens & Koch) R. R. Haynes & Hellquist]

Potamogeton × *nericius* Hagström—(Figure 74). [*P. alpinus* Balbis × *P. gramineus* Linnaeus]

Potamogeton × *nitens* G. Weber—(Figure 75). [*P. gramineus* Linnaeus × *P. perfoliatus* Linnaeus]

Potamogeton perfoliatus Linnaeus × *Potamogeton richardsonii* (A. Bennett) Rydberg—(Figure 75).

Potamogeton praelongus Wulfen × *Potamogeton richardsonii* (A. Bennett) Rydberg—(Figure 75).

Potamogeton × *prussicus* Hagström—(Figure 75). [*P. alpinus* Balbis × *P. perfoliatus* Linnaeus]

Potamogeton × *spathuliformis* (Robbins)—(Figure 76). [*P. gramineus* Linnaeus × *P. illinoensis* Morong]

Stuckenia filiformis (Persoon) Börner subsp. *alpina* (Blytt) R. R. Haynes, Les & M. Král—(Figure 76). $2n = 78$. Highly alkaline water of cold springs and lakes. [*Potamogeton filiformis* Persoon var. *borealis* (Rafinesque) St. John; *P. filiformis* Persoon var. *macounii* Morong]

Stuckenia filiformis (Persoon) Börner subsp. *occidentalis* (J. W. Robbins) R. R. Haynes, Les & M. Král—(Figure 76). $2n =$?. Highly alkaline water of cold streams.

Stuckenia pectinata (Linnaeus) Börner—Sago (Figure 76). $2n =$ 42, ca. 66, 70–87. Brackish or alkaline waters. [*Potamogeton pectinatus* Linnaeus]

RUPPIACEAE

Ruppia maritima Linnaeus—(Figure 77). $2n = 14, 16, 20, 24, 28, 40$. Saline or brackish water. [*R. maritima* var. *longipes* Hagström; *R. maritima* var. *obliqua* (Schur) Ascherson & Graebner; *R. maritima* var. *rostrata* Agardh; *R. maritima* var. *subcapitata* Fernald & Wiegand]

SCHEUCHZERIACEAE

Scheuchzeria palustris Linnaeus—(Figure 77). $2n = 22$. Sphagnum bogs. [*S. palustris* var. *americana* Fernald]

SMILACACEAE

Smilax glauca Walter—Sawbrier (Figure 77). $2n = 32$. Sandy thickets, open woods. [*S. glauca* Walter var. *leurophylla* Blake]

Smilax herbacea Linnaeus—Carrion-flower (Figure 77). $2n = 26$. Rich thickets, low woods.

Smilax pulverulenta Michaux—(Figure 78). $2n = ?$. Rich mostly basic woods and thickets. [*S. herbacea* Walter var. *pulverulenta* (Michaux) A. Gray]

Smilax rotundifolia Linnaeus—Common Greenbrier (Figure 78). $2n = 32$. Woods and thickets.

Smilax tamnoides Linnaeus—China-root (Figure 78). $2n = 32$. Low woods and thickets. [*S. tamnoides* var. *hispida* (Muhlenberg) Fernald; *S. hispida* Muhlenberg ex Torrey]

SPARGANIACEAE

Sparganium americanum Nuttall—(Figure 78). $2n = ?$. Muddy shores, shallow water.

Sparganium androcladum (Engelmann) Morong—(Figure 79). $2n = ?$. Muddy shores, marshes, shallow water.

Sparganium angustifolium Michaux—(Figure 79). $2n = 30$. Shallow-to-deep water, shores. [*S. multipedunculatum* (Morong) Rydberg]

Sparganium emersum Rehmann—(Figure 79). $2n = 30$. Muddy shores, marshes, shallow water. [*S. chlorocarpum* Rydberg; *S. chlorocarpum* Rydberg var. *acaule* (Beeby) Fernald]

Sparganium eurycarpum Engelmann—(Figure 79). $2n = 30$. Mostly basic muddy shores, marshes, shallow water.

Sparganium fluctuans (Engelmann ex Morong) B. L. Robinson—(Figure 80). $2n = ?$. Nonbasic lakes and ponds.

Sparganium natans Linnaeus—(Figure 80). $2n = 30$. Shallow pools, streams, shores, bogs. [*S. minimum* (Hartman) Fries]

—*Sparganium* hybrids—

Sparganium americanum Nuttall × *Sparganium fluctuans* (Engelmann ex Morong) B. L. Robinson—(Figure 80).

Sparganium angustifolium Michaux × *Sparganium emersum* Rehmann—(Figure 80).

TYPHACEAE

Typha angustifolia Linnaeus—(Figure 81). $2n = 30$. Salt marshes, inland marshes, mostly alkaline, and near highways.

Typha latifolia Linnaeus—Common Cat-tail (Figure 81). $2n = 30$. Marshes, shores, roadside ditches.

—*Typha* hybrids—

Typha × *glauca* Godron—(Figure 81). [*T. angustifolia* Linnaeus × *T. latifolia* Linnaeus]

XYRIDACEAE

Xyris difformis Chapman var. *difformis*—Common Yellow-eyed Grass (Figure 81). $2n = 18$. Sandy shores of acid ponds, lakes, and bogs. [*X. caroliniana* misapplied]

Xyris montana Ries—Small Yellow-eyed Grass (Figure 82). $2n = ?$. Sandy mostly acidic shores and bogs.

Xyris smalliana Nash—(Figure 82). $2n = 18$. Muddy shores, bogs, swamps, sandy or sphagnous shallows. [*X. caroliniana* Walter; *X. congdoni* Small]

Xyris torta Smith—(Figure 82). $2n = 18$. Sandy shores, sphagnous depressions, meadows.

ZANNICHELLIACEAE

Zannichellia palustris Linnaeus—Horned Pondweed (Figure 82). $2n = 12, 24, 28, 32, 34, 36, 48$. Fresh-to-brackish water of lakes, streams, and estuaries. [*Z. palustris* var. *major* (Hartman) W. D. J. Koch]

ZOSTERACEAE

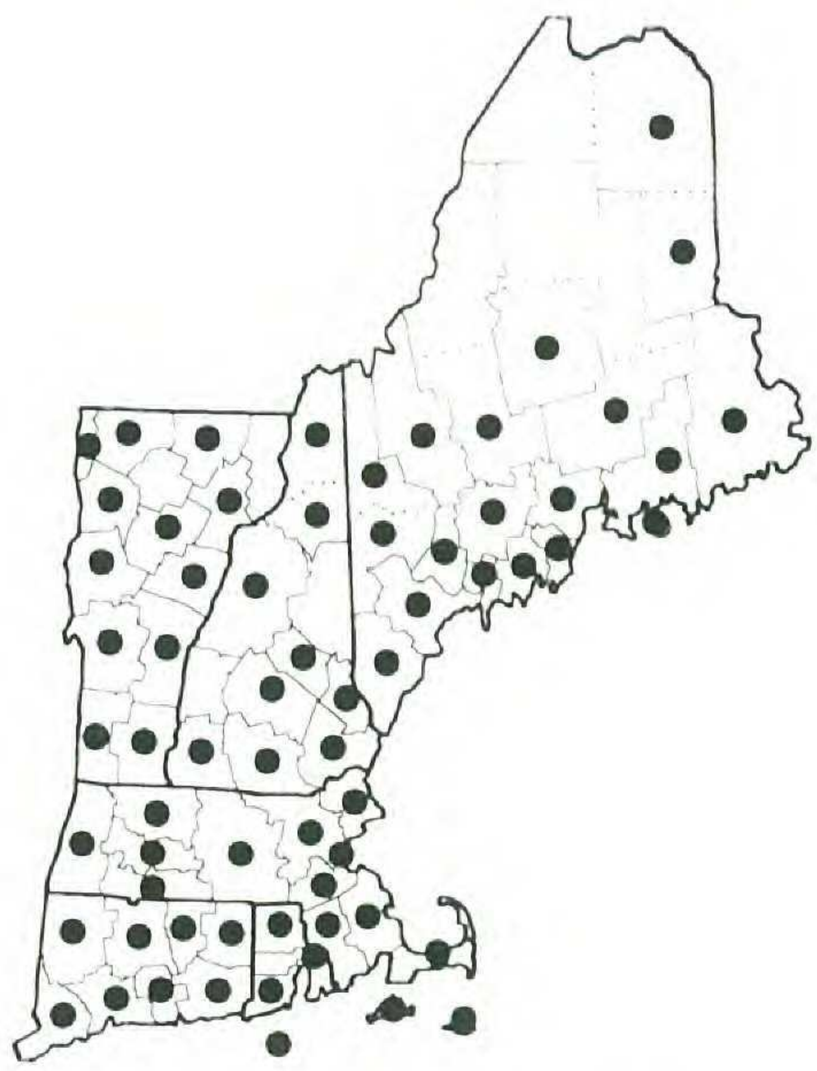
Zostera marina Linnaeus—Common Eel-grass (Figure 83). $2n = 12$. Shallow waters of coastal estuaries, coves, and bays. [*Z. marina* var. *stenophylla* Ascherson & Graebner]

ACKNOWLEDGMENTS. We thank the curators and directors of the herbaria of Harvard University, the University of Maine, the University of Massachusetts, and the University of Vermont for allowing us access to their collections. We particularly appreciate the kindness of David Barrington, Chris Campbell, and Karen Searcy for allowing use of the collections in their care outside of normal hours of operation. We are grateful also to Karen Searcy for allowing access to the notebooks of Harry E. Ahles at the University of Massachusetts and for verifying some voucher specimens there. We also appreciate the research into voucher specimens by Arthur Haines. Barre Hellquist gave especially generously of his time and knowledge to provide much information on the aquatic groups. Kancheepuram Gandhi provided valuable assistance in settling nomenclatural issues. Les Mehrhoff also was very helpful in reviewing our Connecticut data and providing many additional records. Janet Sullivan verified records at NHA. Charles Sheviak provided information relative to *Cypripedium parviflorum*. Anthony Reznicek searched for a voucher specimen at MICH.

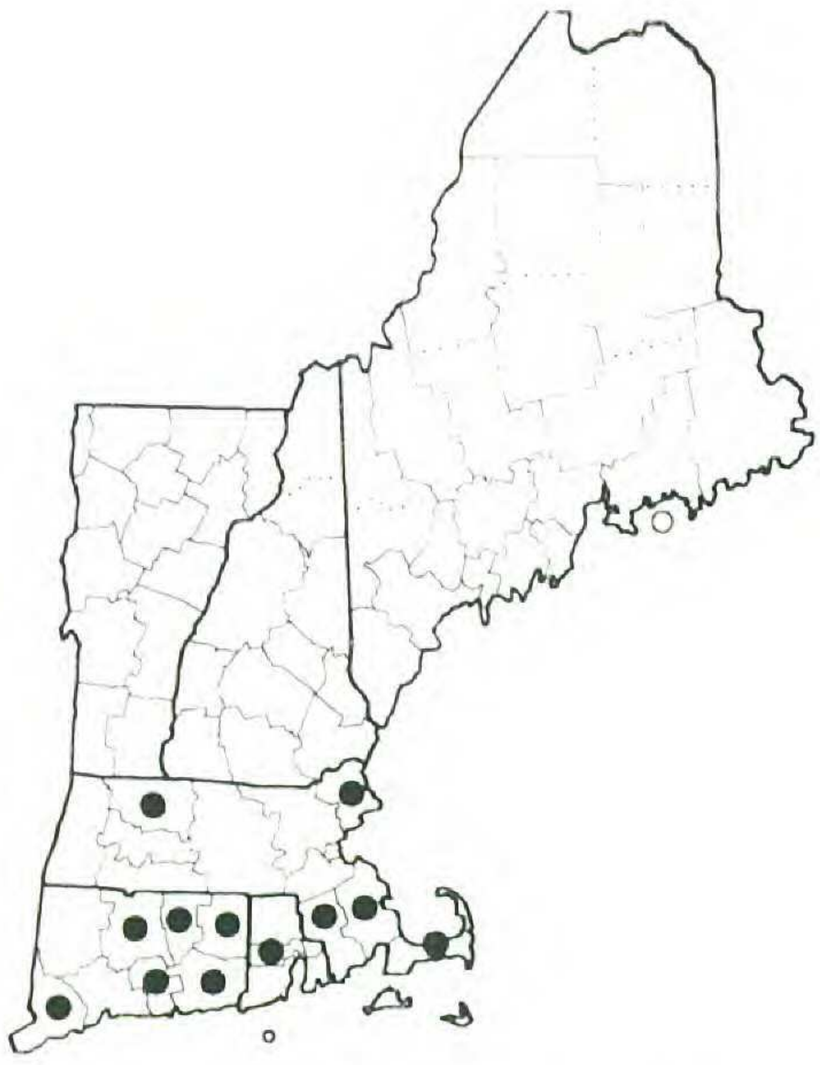
ADDENDUM. As this paper went to press an article in Rhodora (101:419–423, 1999) by Donald H. Les and Robert S. Capers reported the collection of *Limnobium spongia* (Bosc) Steudel (Hydrocharitaceae) from Tolland County, Connecticut. The voucher specimen is deposited at CONN.

Figure 1. Key map for counties of the New England states (and Mt. Desert Island, Maine; Block Island, Rhode Island; arbitrary divisions of larger Maine counties and of Coös County, New Hampshire).

Acorus americanus



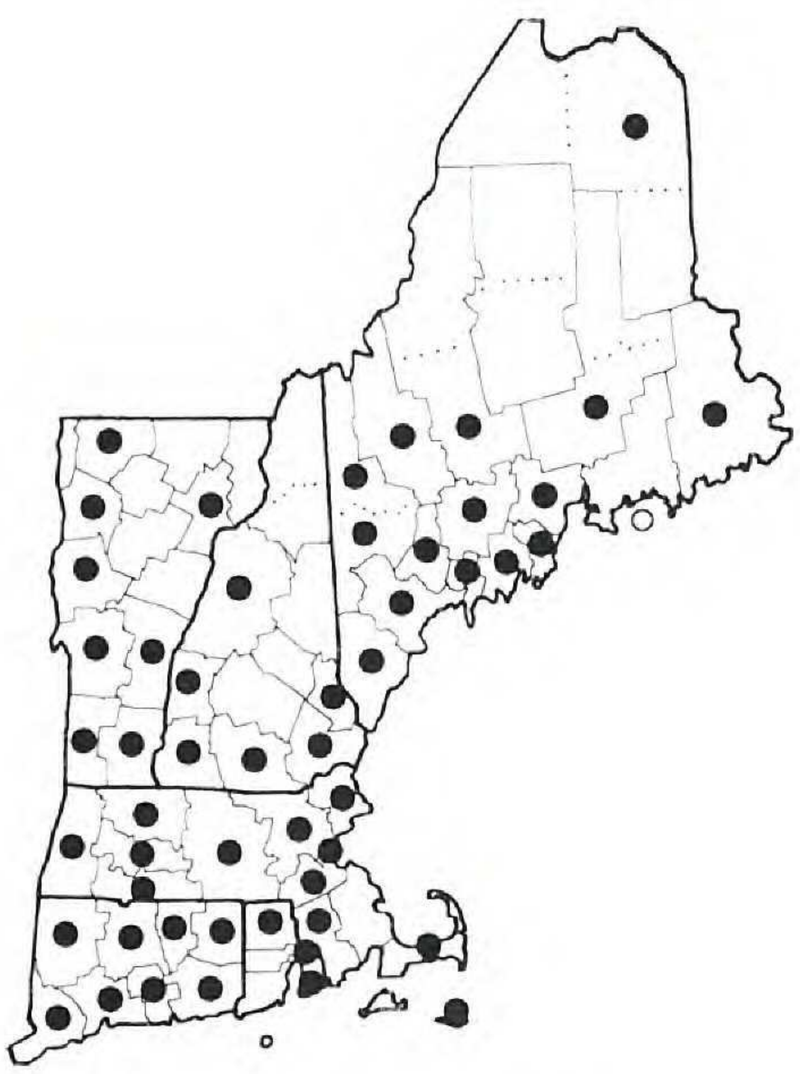
ACORUS CALAMUS



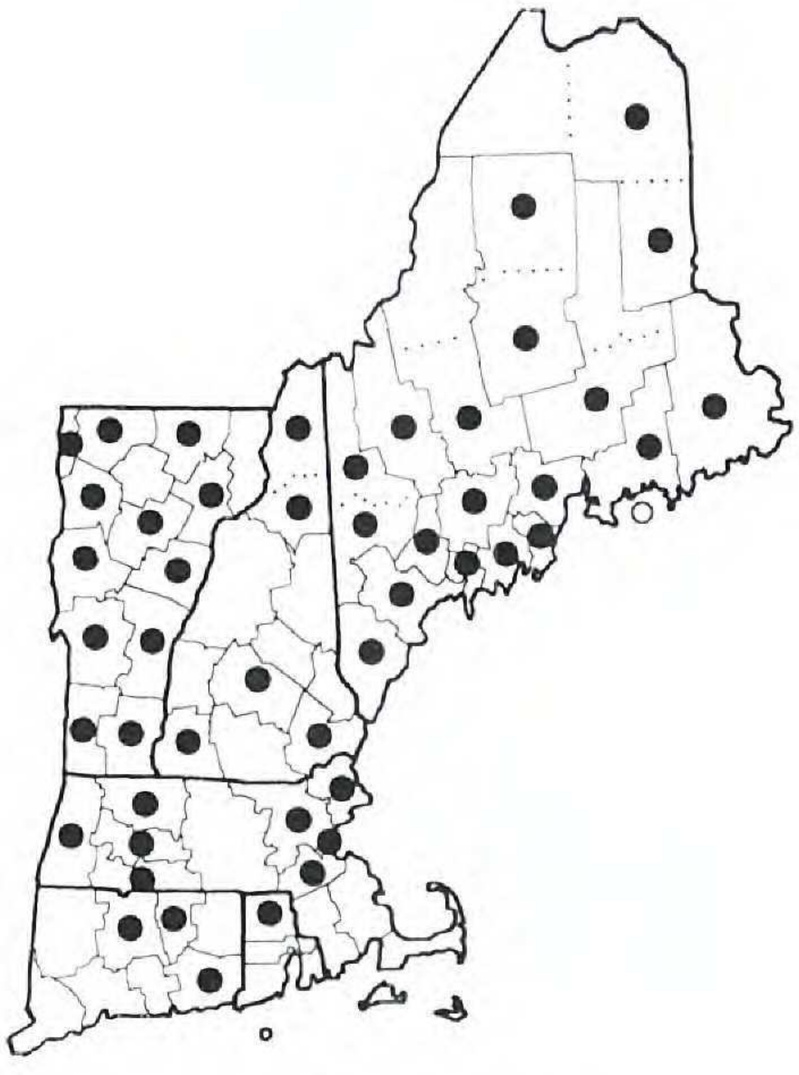
YUCCA FILAMENTOSA

Alisma gramineum

Figure 2. Distribution maps for *Acorus americanus, A. CALAMUS, YUCCA FILAMENTOSA,* and *Alisma gramineum.*

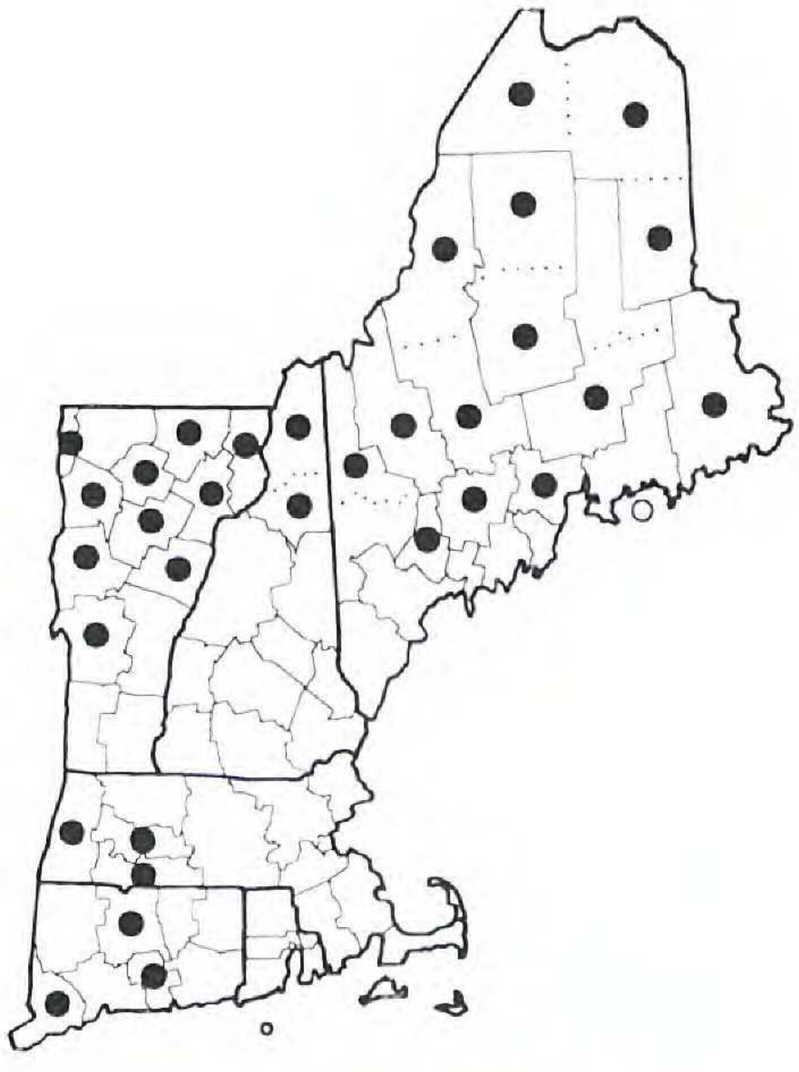


Alisma subcordatum



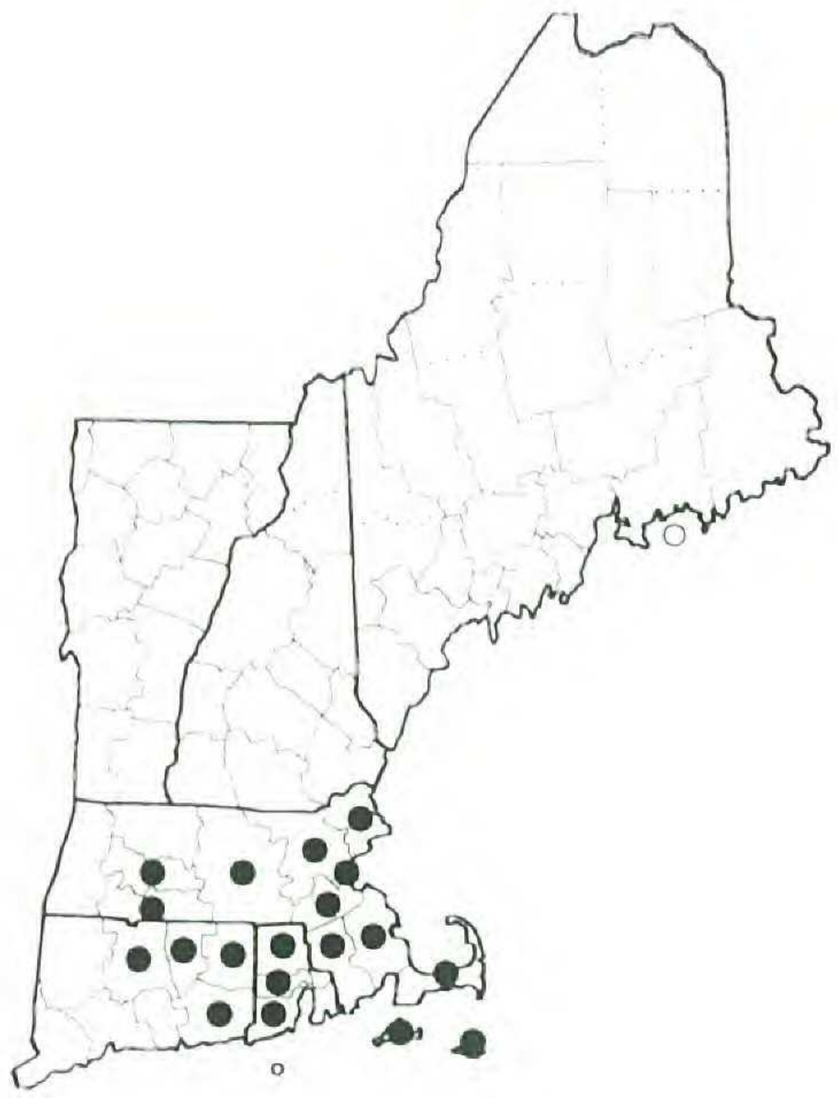
Alisma triviale

Echinodorus tenellus

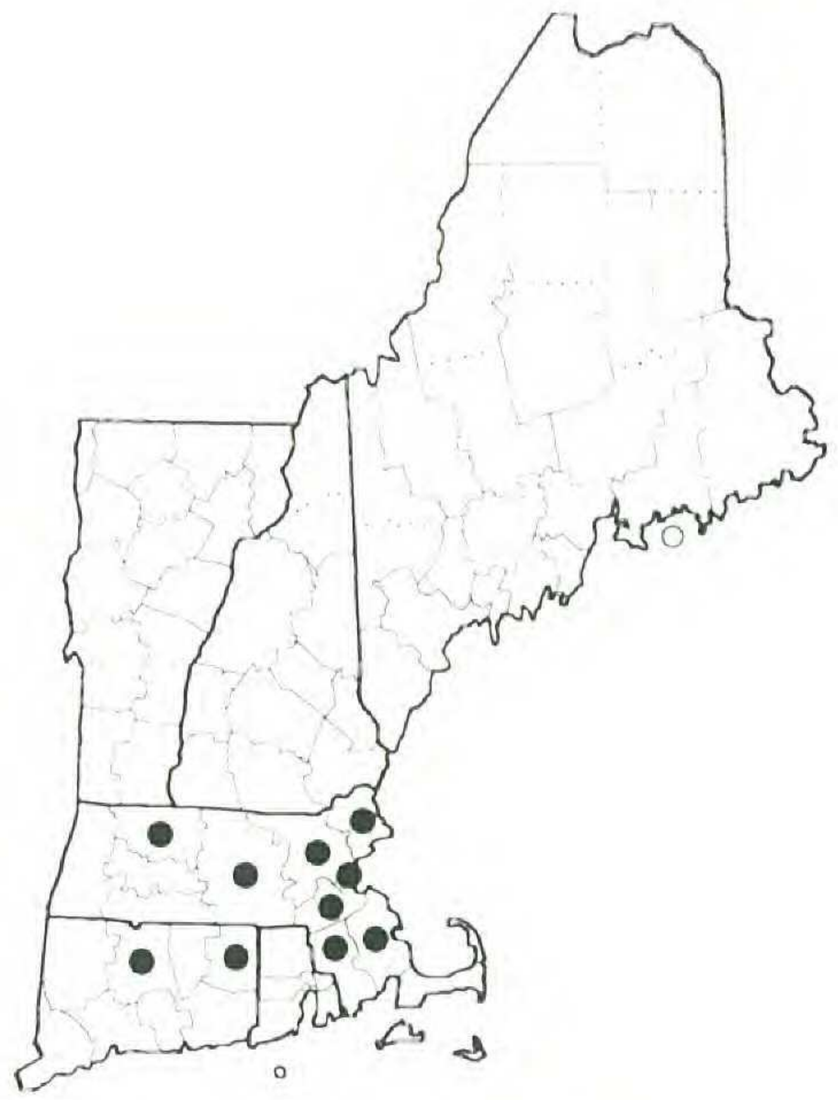


Sagittaria cuneata

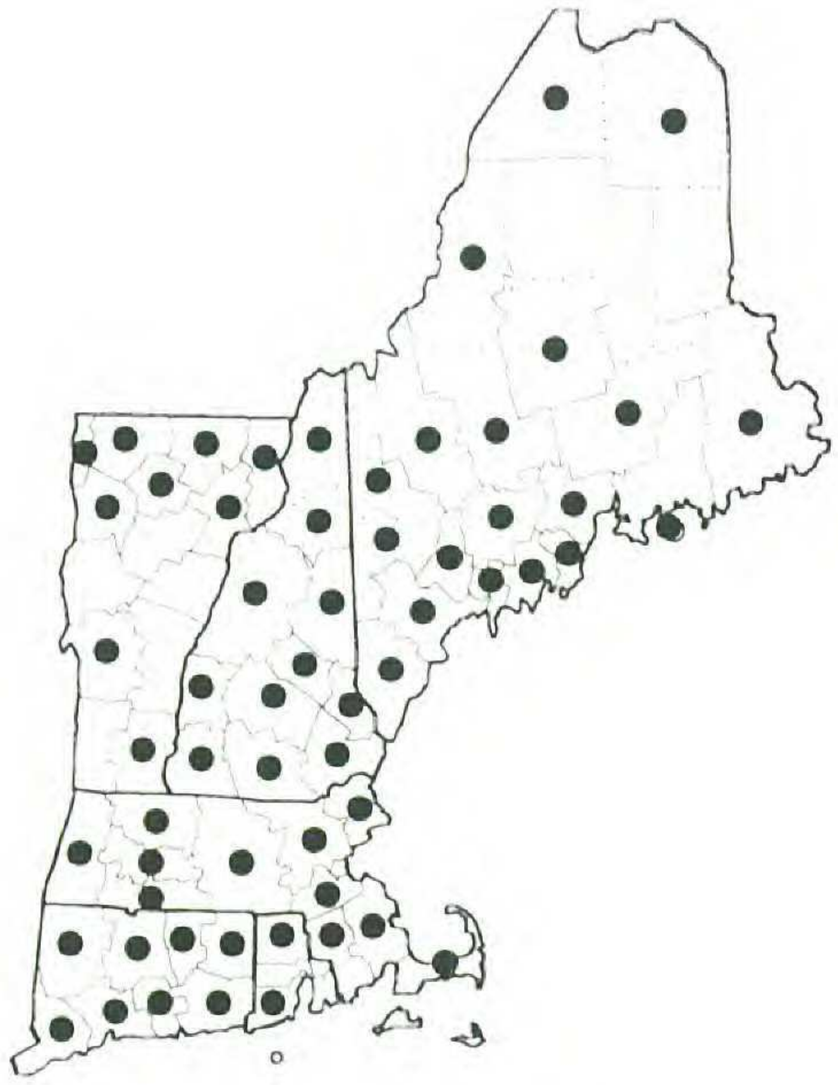
Figure 3. Distribution maps for *Alisma subcordatum, A. triviale, Echinodorus tenellus,* and *Sagittaria cuneata.*



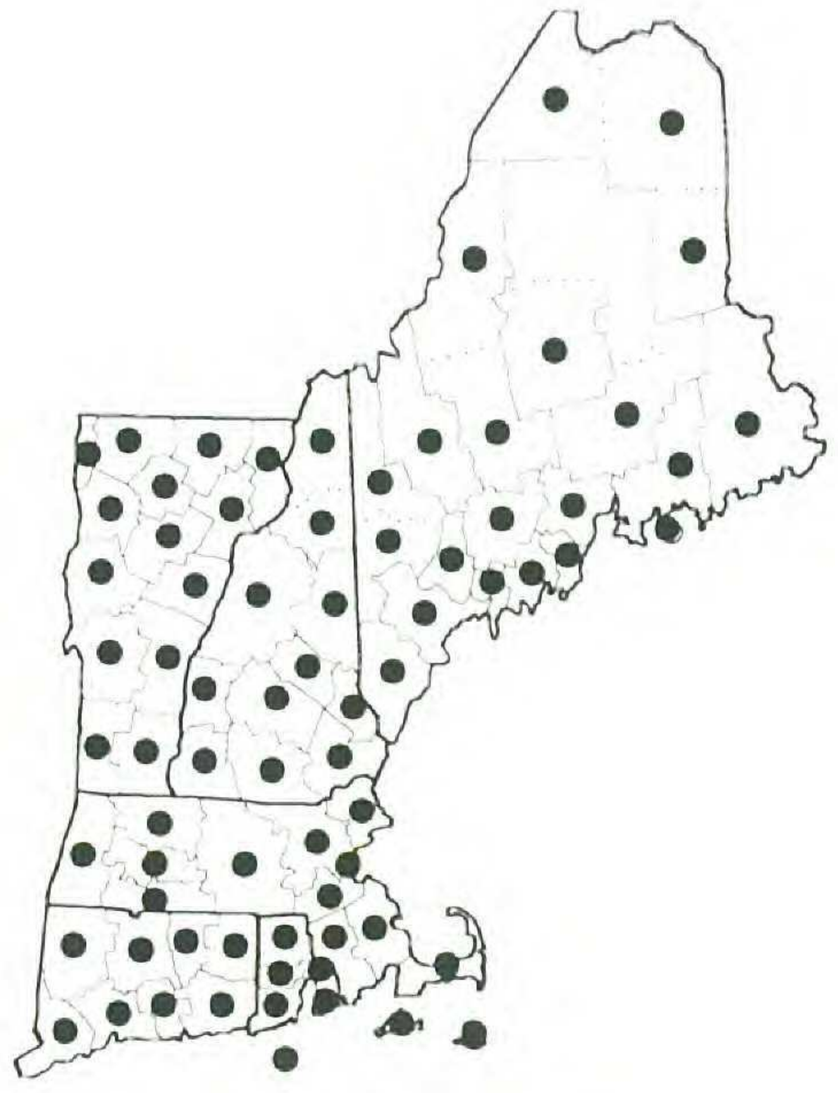
Sagittaria engelmanniana



Sagittaria filiformis

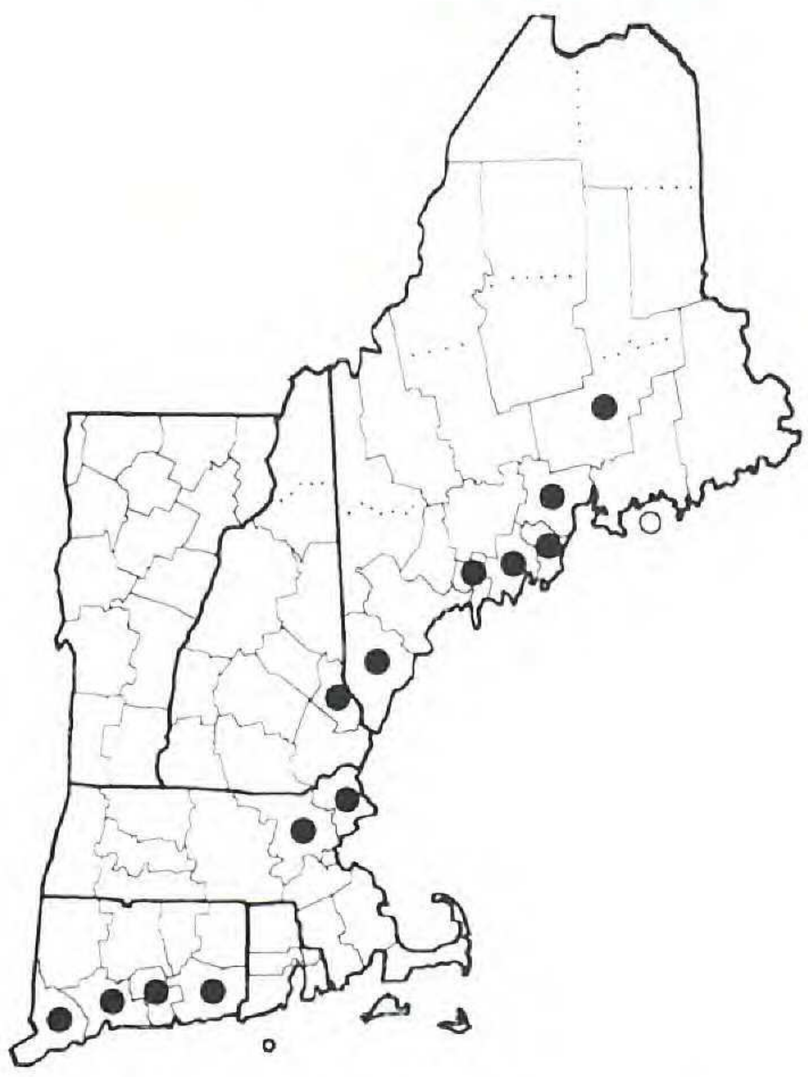


Sagittaria graminea subsp. *graminea*

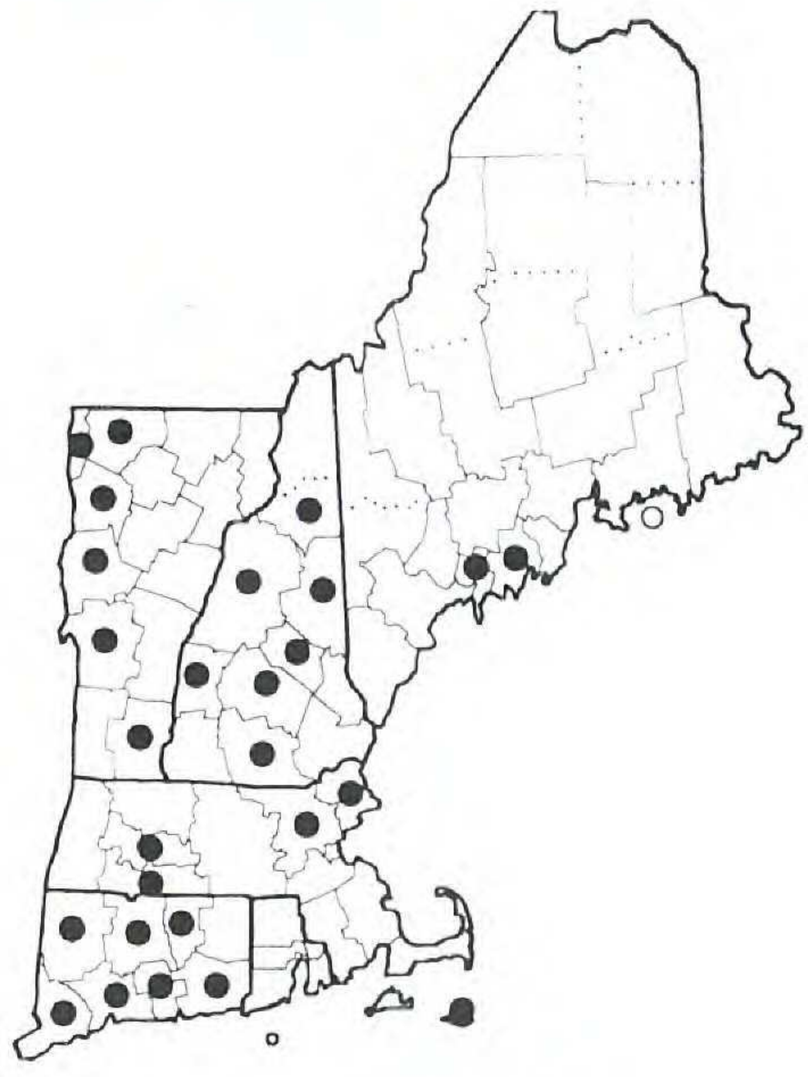


Sagittaria latifolia

Figure 4. Distribution maps for *Sagittaria engelmanniana, S. filiformis, S. graminea* subsp. *graminea,* and *S. latifolia.*



Sagittaria montevidensis subsp. *spongiosa*



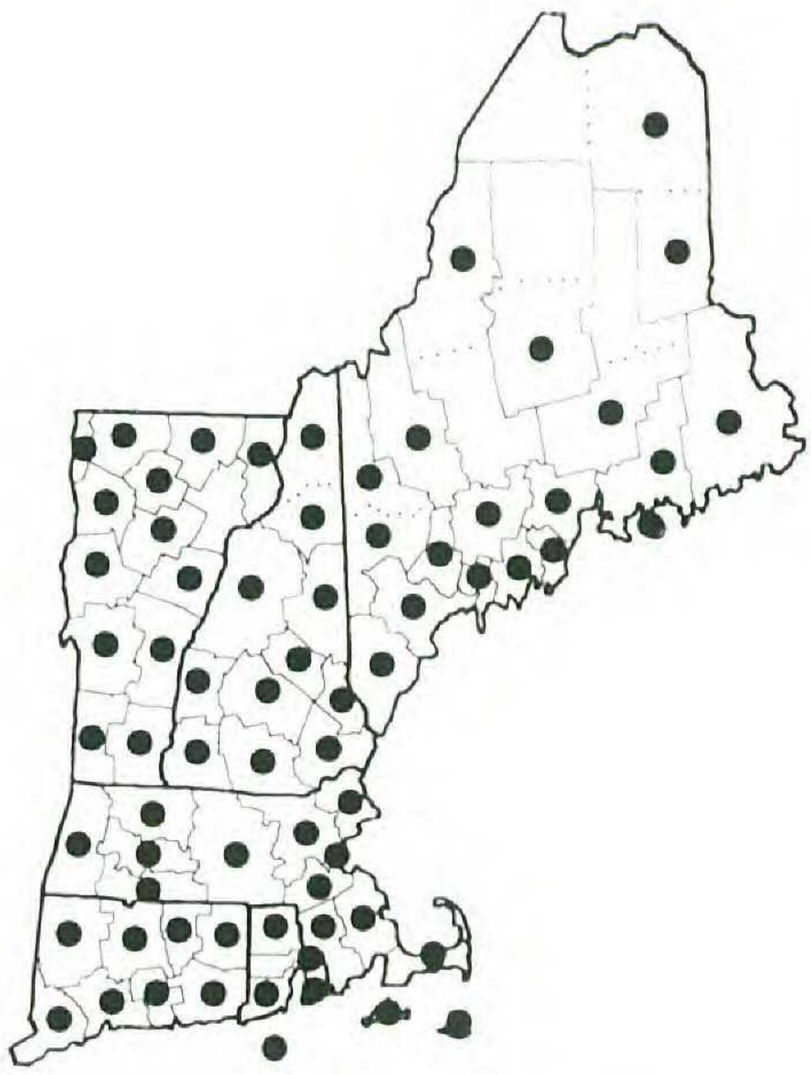
Sagittaria rigida

Sagittaria subulata

Sagittaria teres

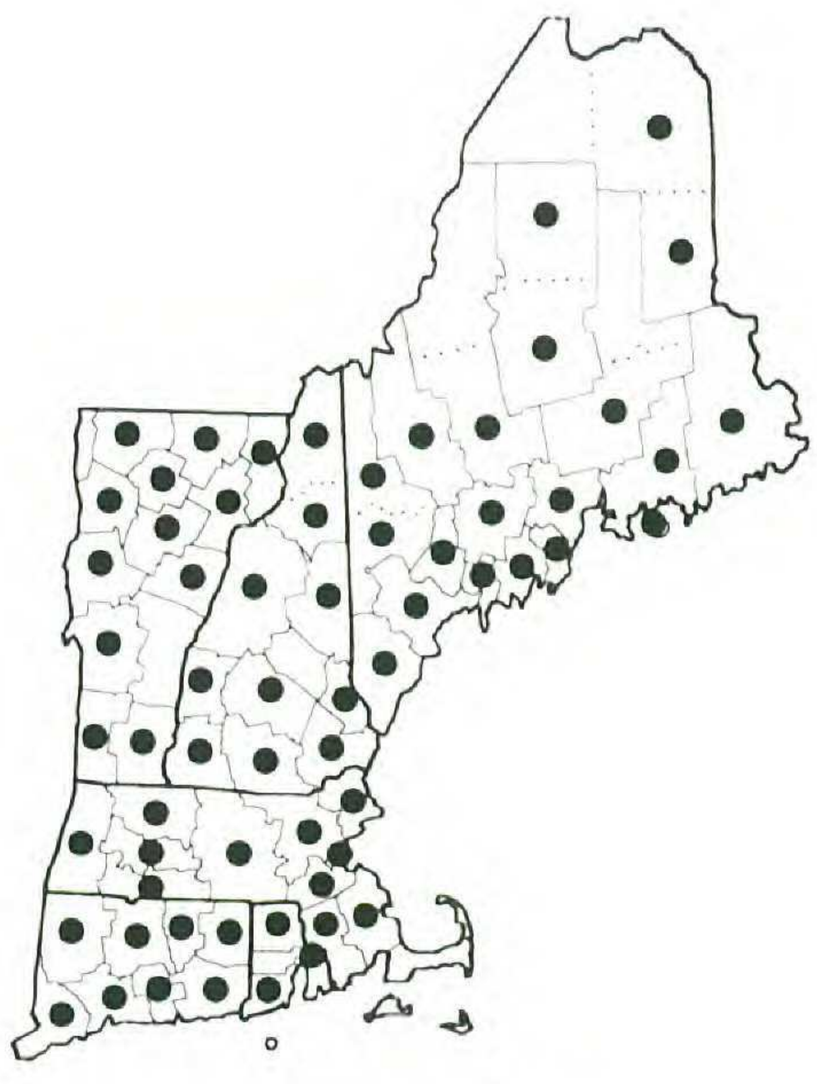
Figure 5. Distribution maps for *Sagittaria montevidensis* subsp. *spongiosa*, *S. rigida*, *S. subulata*, and *S. teres*.

Arisaema dracontium



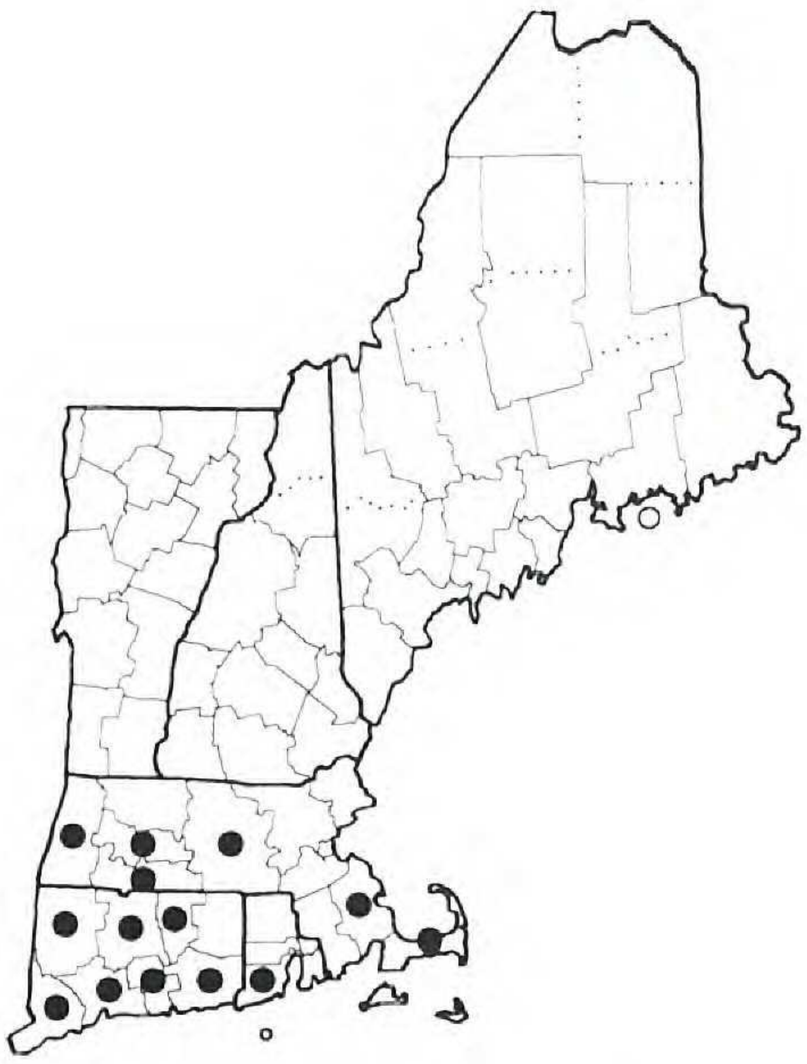
Arisaema triphyllum

Arisaema dracontium X *A. triphyllum*

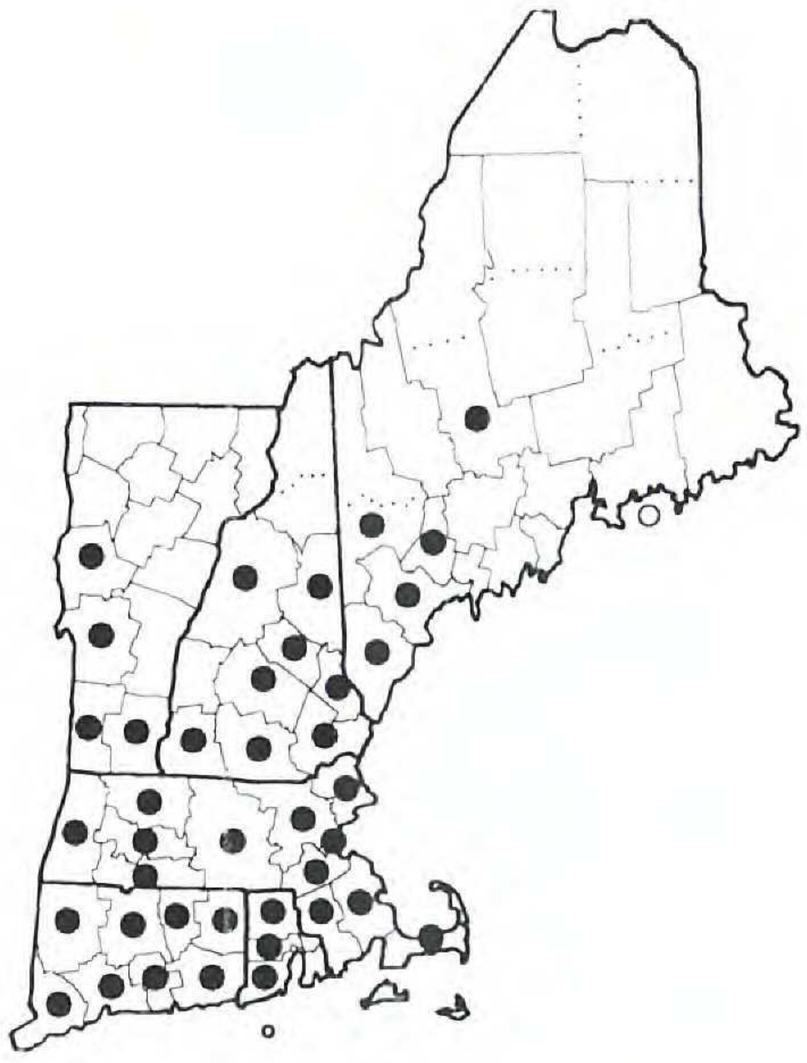


Calla palustris

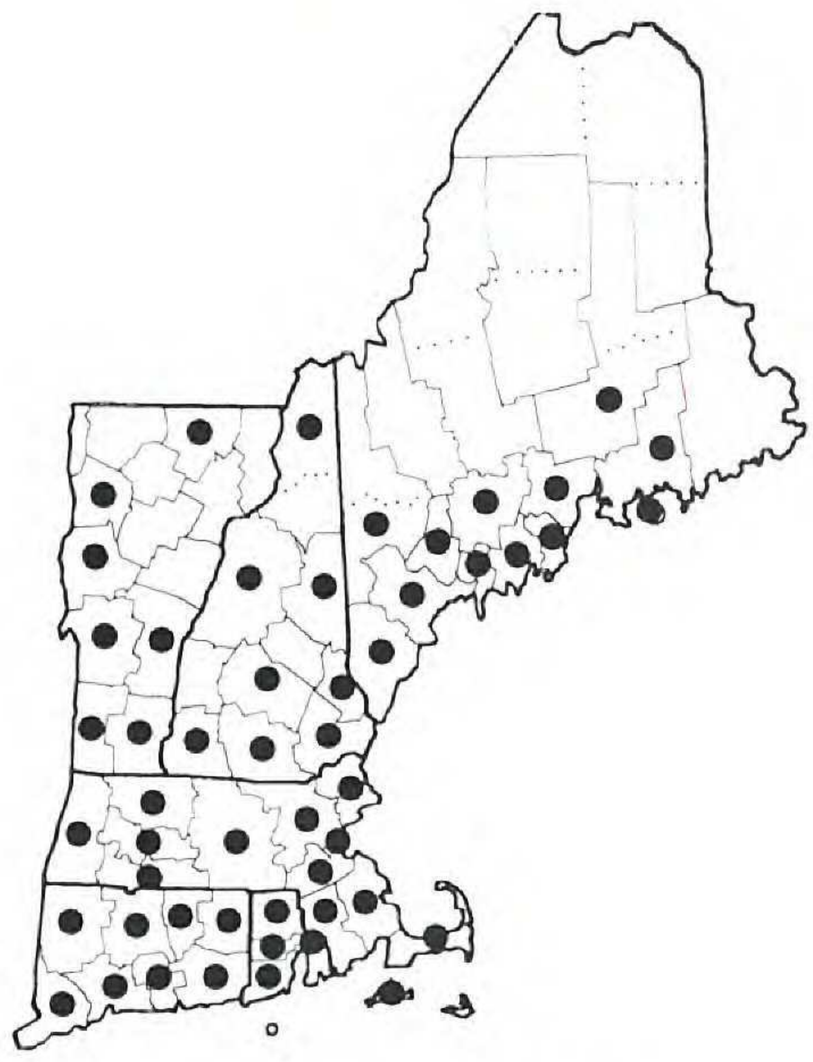
Figure 6. Distribution maps for *Arisaema dracontium, A. triphyllum, A. dracontium* X *A. triphyllum,* and *Calla palustris.*



Orontium aquaticum



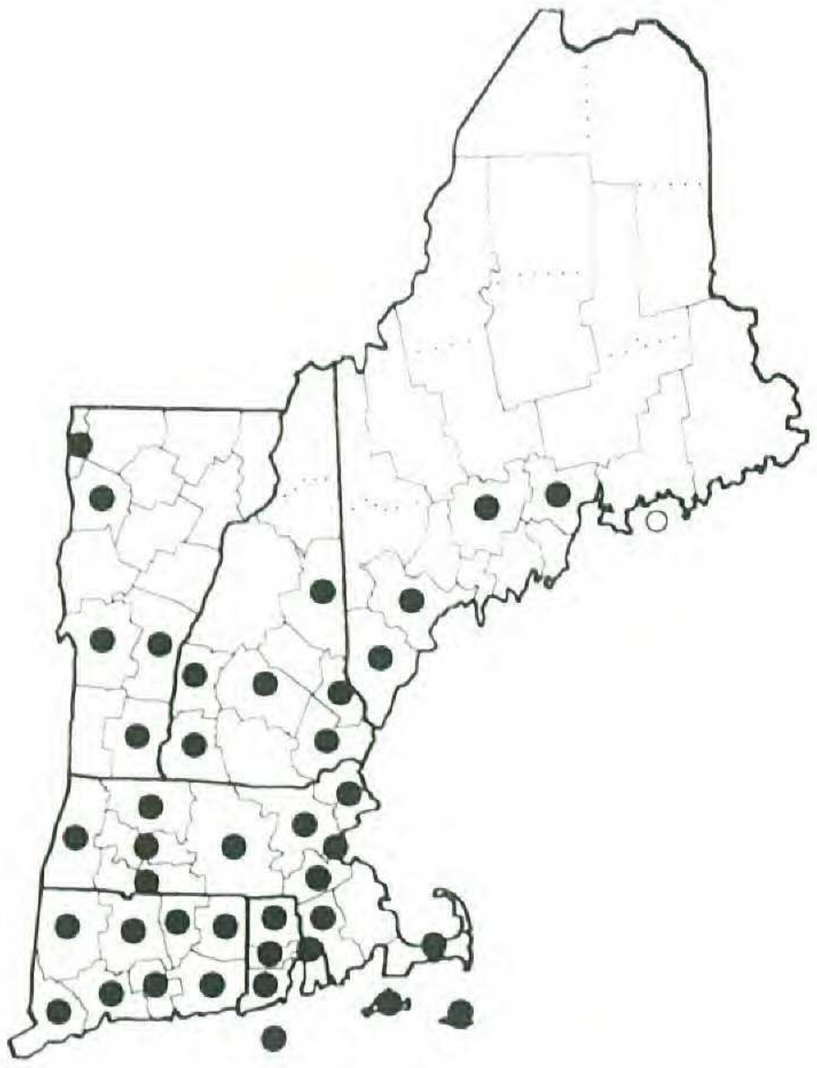
Peltandra virginica



Symplocarpus foetidus

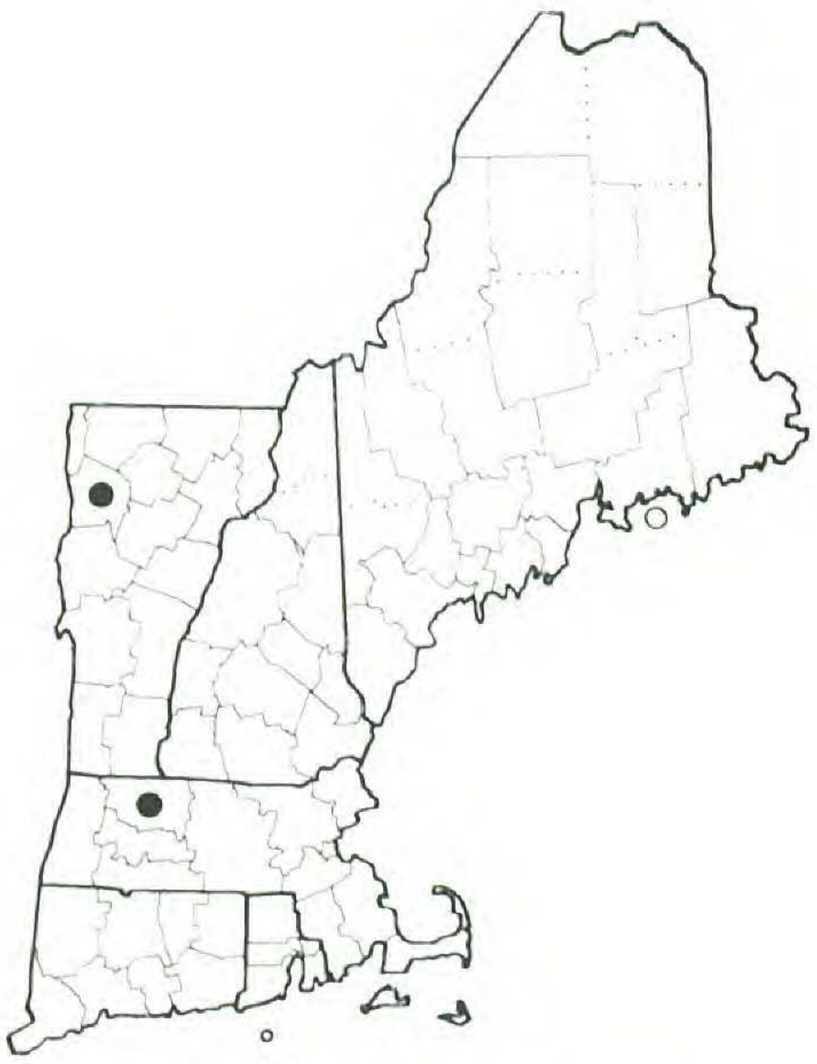
BUTOMUS UMBELLATUS

Figure 7. Distribution maps for *Orontium aquaticum, Peltandra virginica, Symplocarpus foetidus,* and *BUTOMUS UMBELLATUS.*

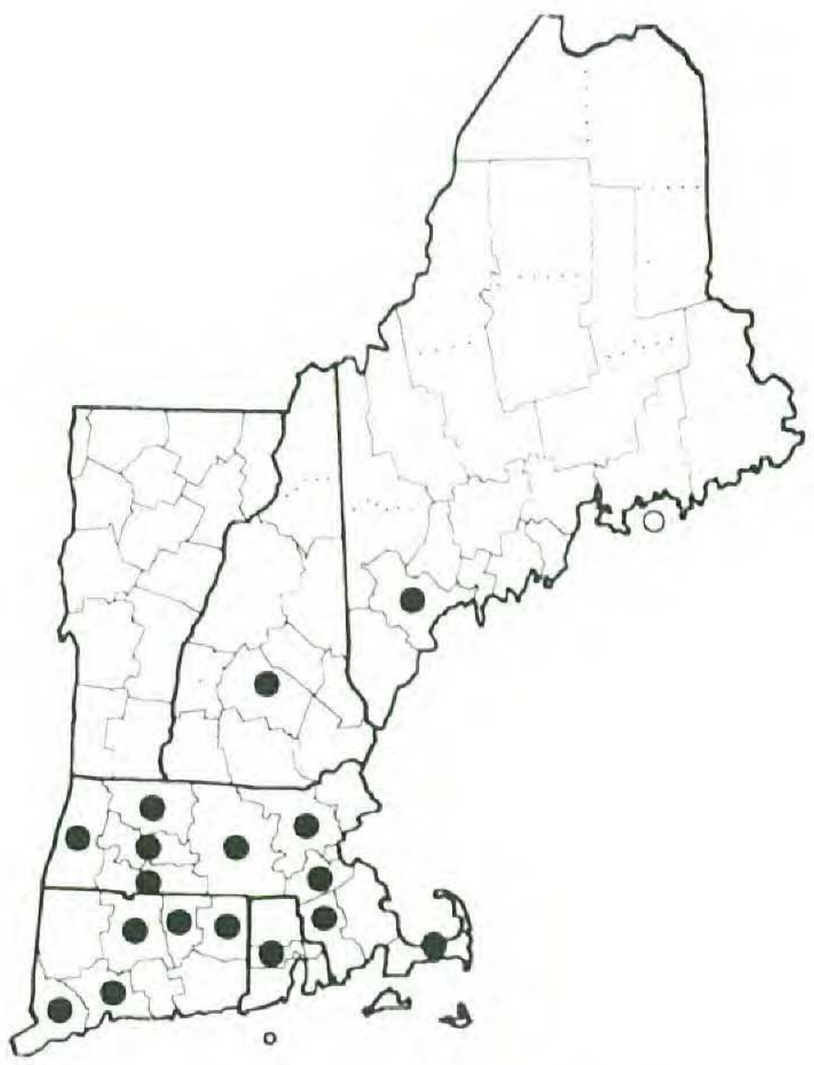


COMMELINA COMMUNIS

COMMELINA DIFFUSA

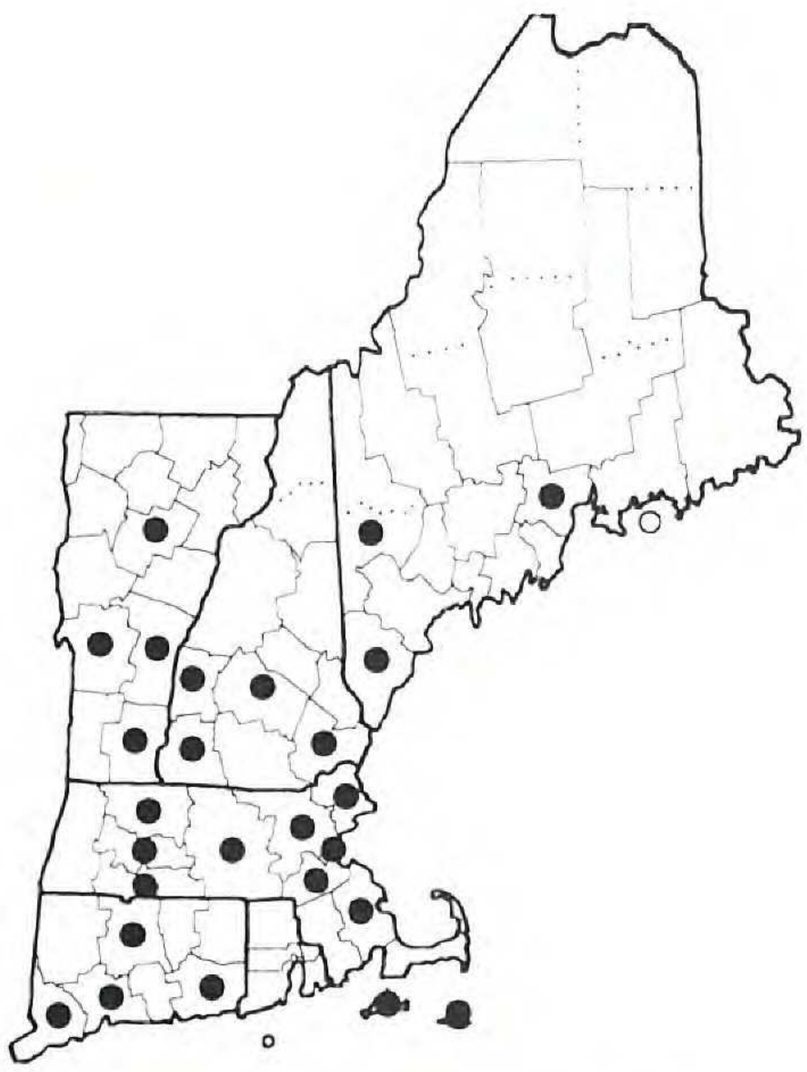


TRADESCANTIA BRACTEATA



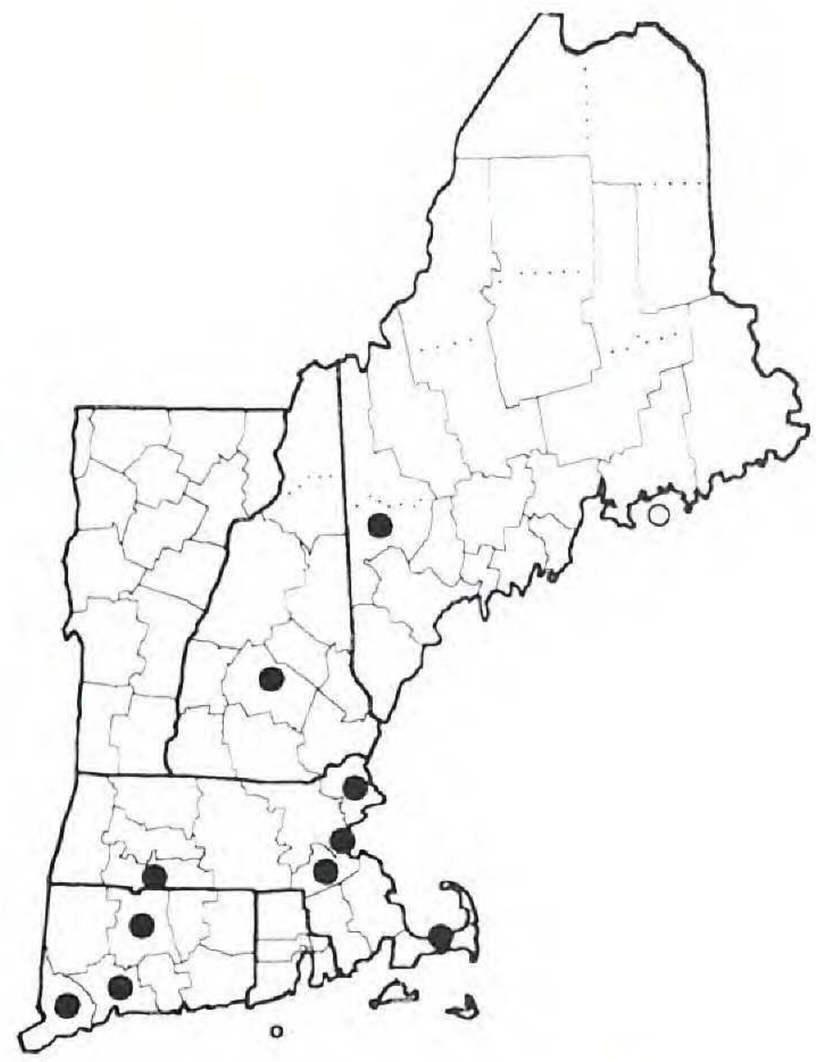
Tradescantia ohiensis

Figure 8. Distribution maps for *COMMELINA COMMUNIS*, *C. DIFFUSA*, *TRADESCANTIA BRACTEATA*, and *T. ohiensis*.



Tradescantia virginiana

Tradescantia ohiensis X *T. SUBASPERA*

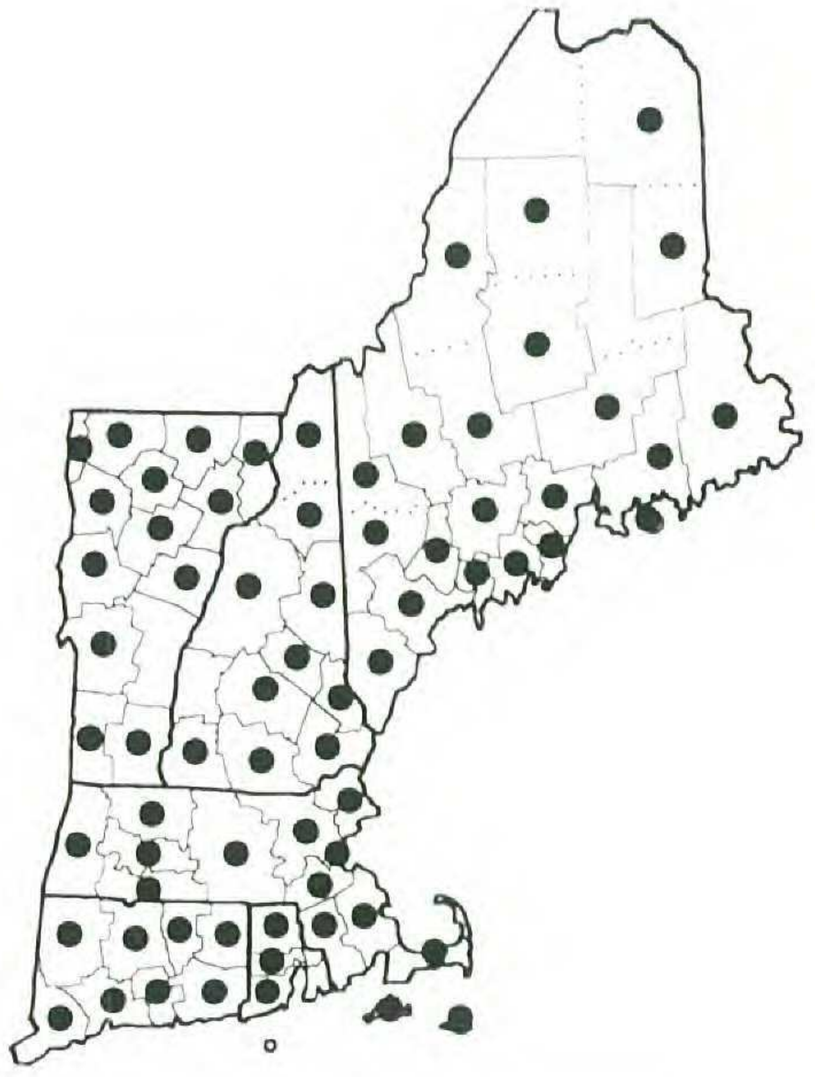


Tradescantia ohiensis X *T. virginiana*

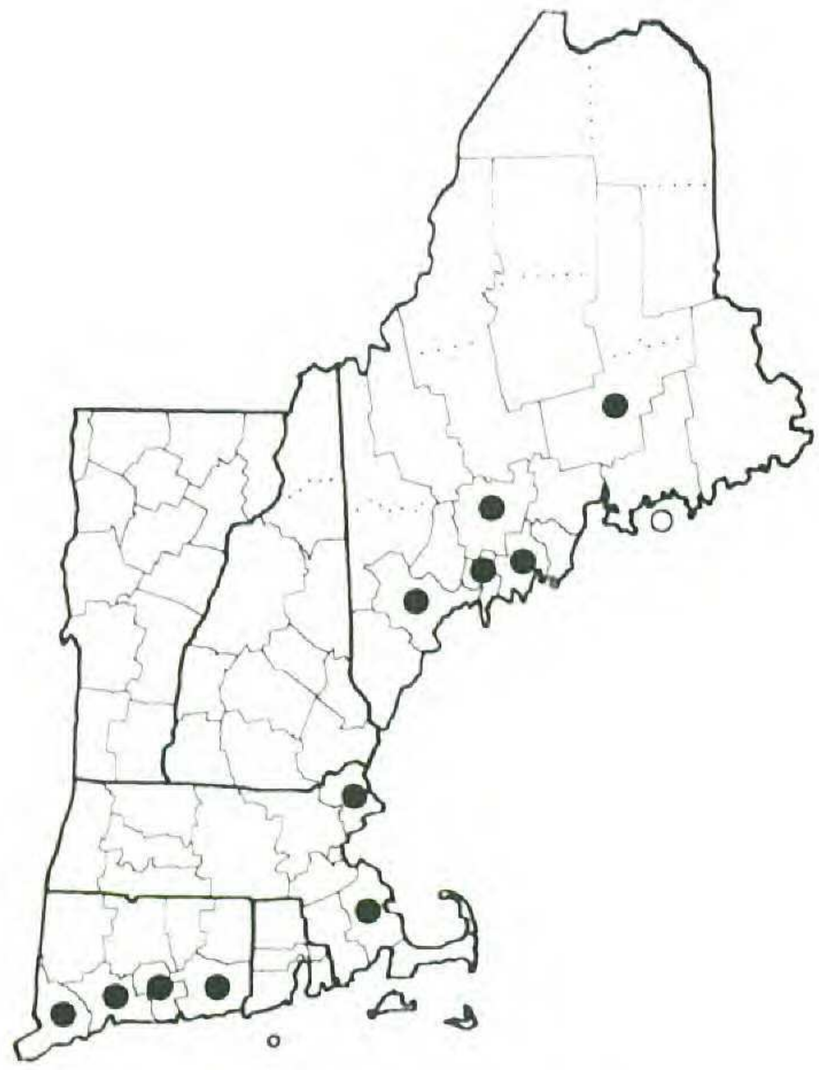
DIOSCOREA BATATAS

Figure 9. Distribution maps for *Tradescantia virginiana, T. ohiensis* X *T. SUBASPERA, T. ohiensis* X *T. virginiana,* and *DIOSCOREA BATATAS.*

Dioscorea villosa



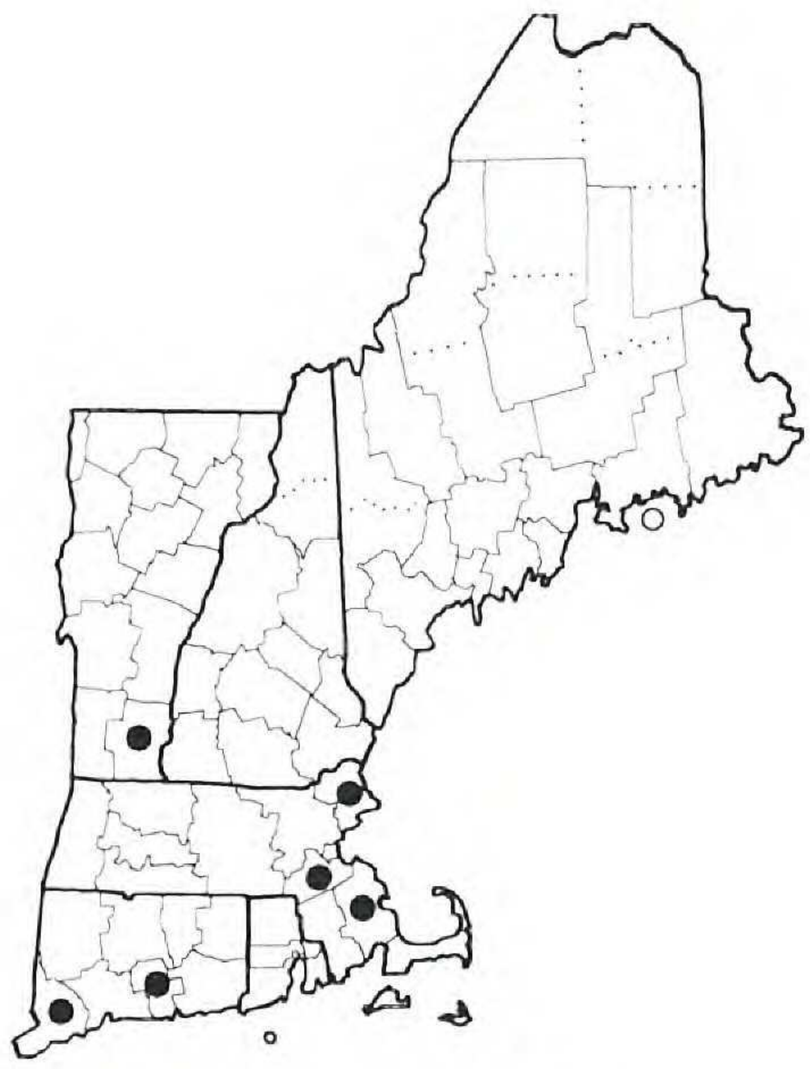
Eriocaulon aquaticum



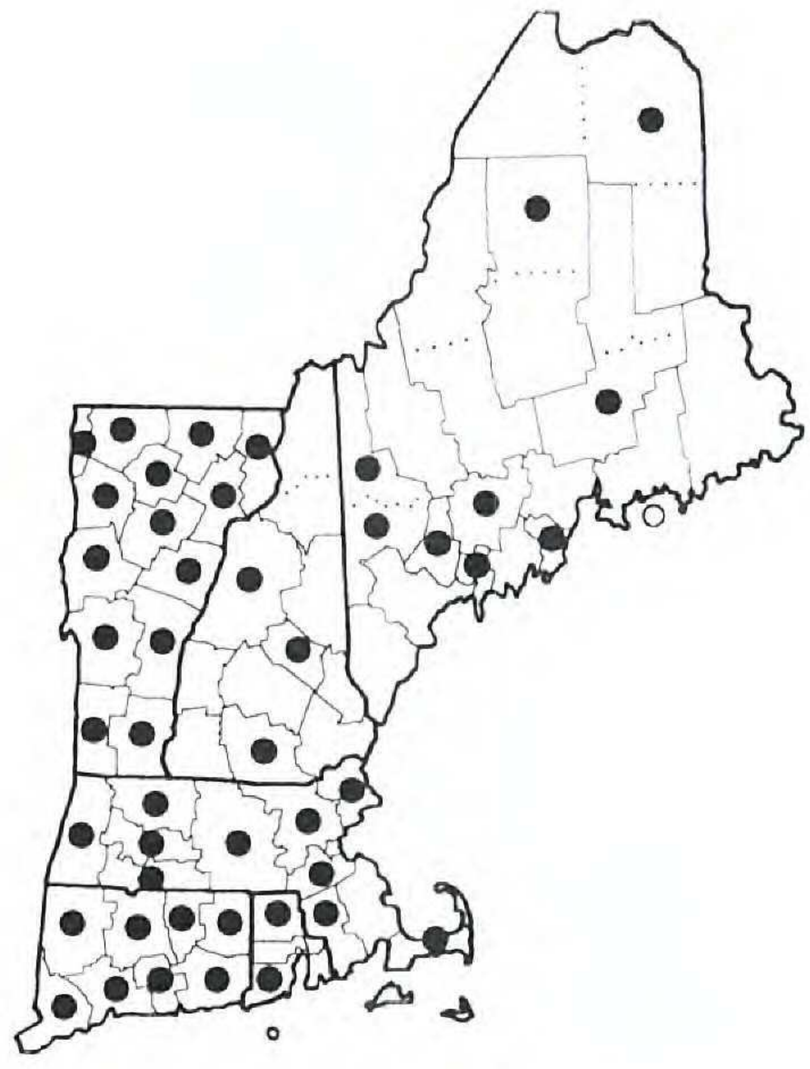
Eriocaulon parkeri

Lachnanthes caroliniana

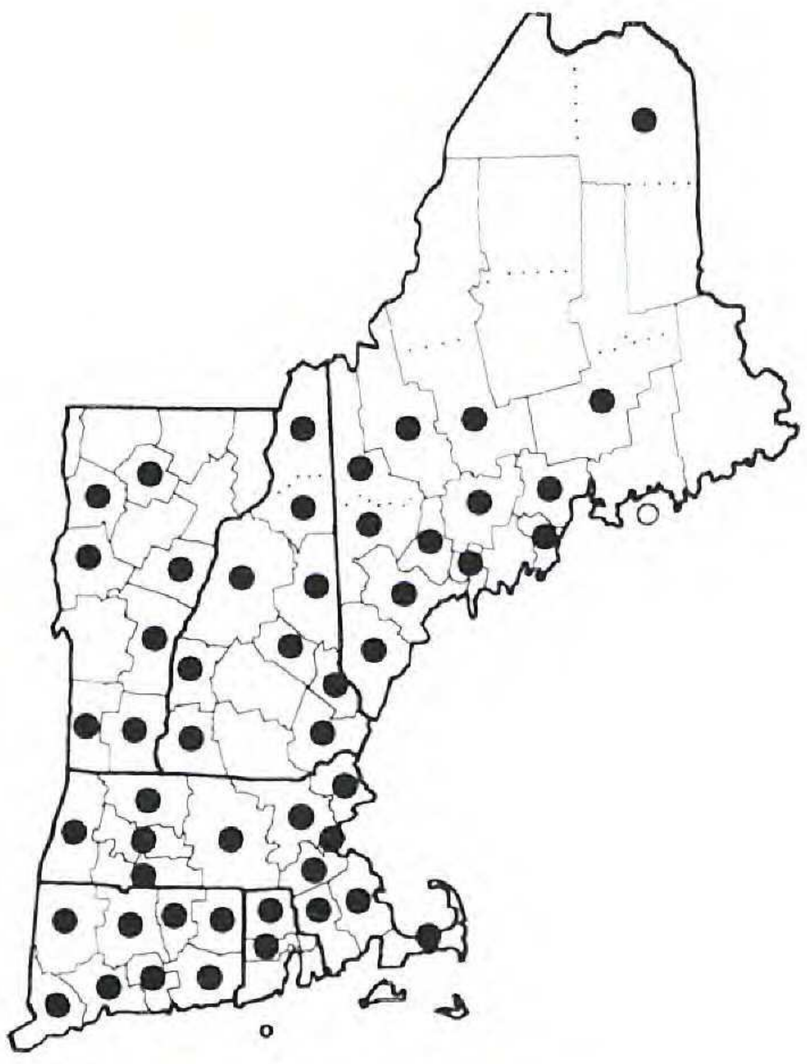
Figure 10. Distribution maps for *Dioscorea villosa, Eriocaulon aquaticum, E. parkeri,* and *Lachnanthes caroliniana.*



EGERIA DENSA



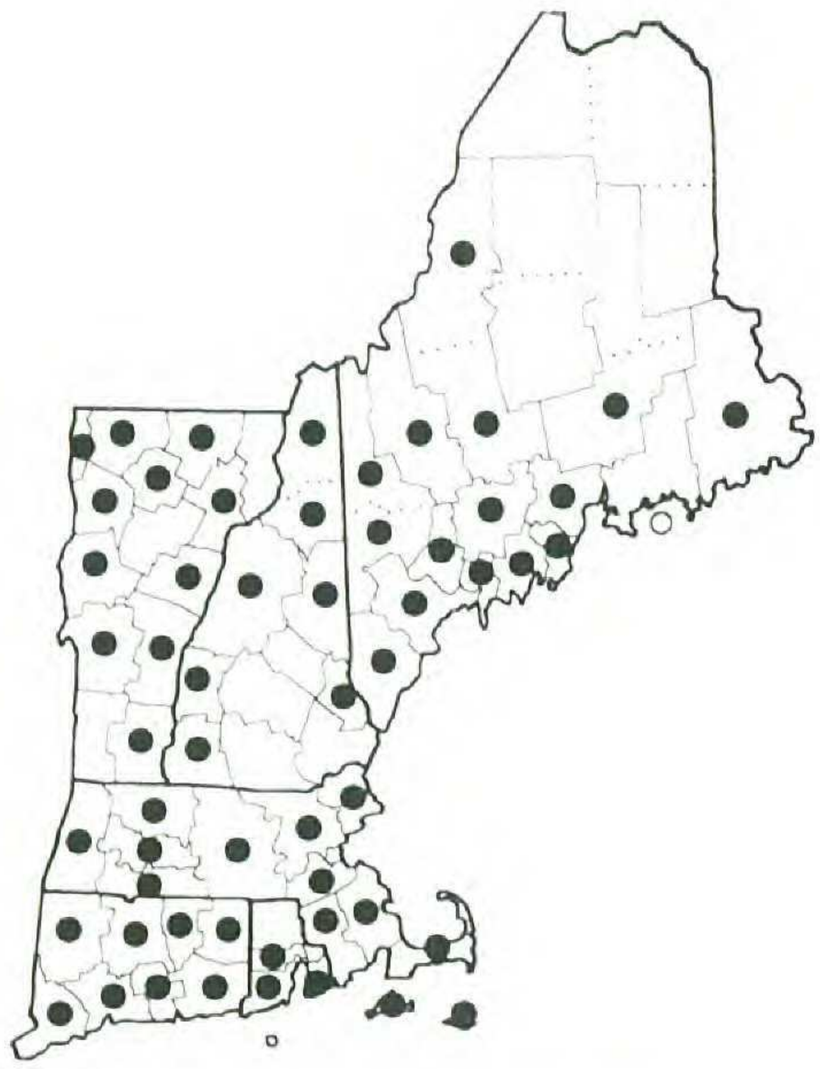
Elodea canadensis



Elodea nuttallii

HYDRILLA VERTICILLATA

Figure 11. Distribution maps for *EGERIA DENSA*, *Elodea canadensis*, *E. nuttallii*, and *HYDRILLA VERTICILLATA*.



Vallisneria americana

BELAMCANDA CHINENSIS

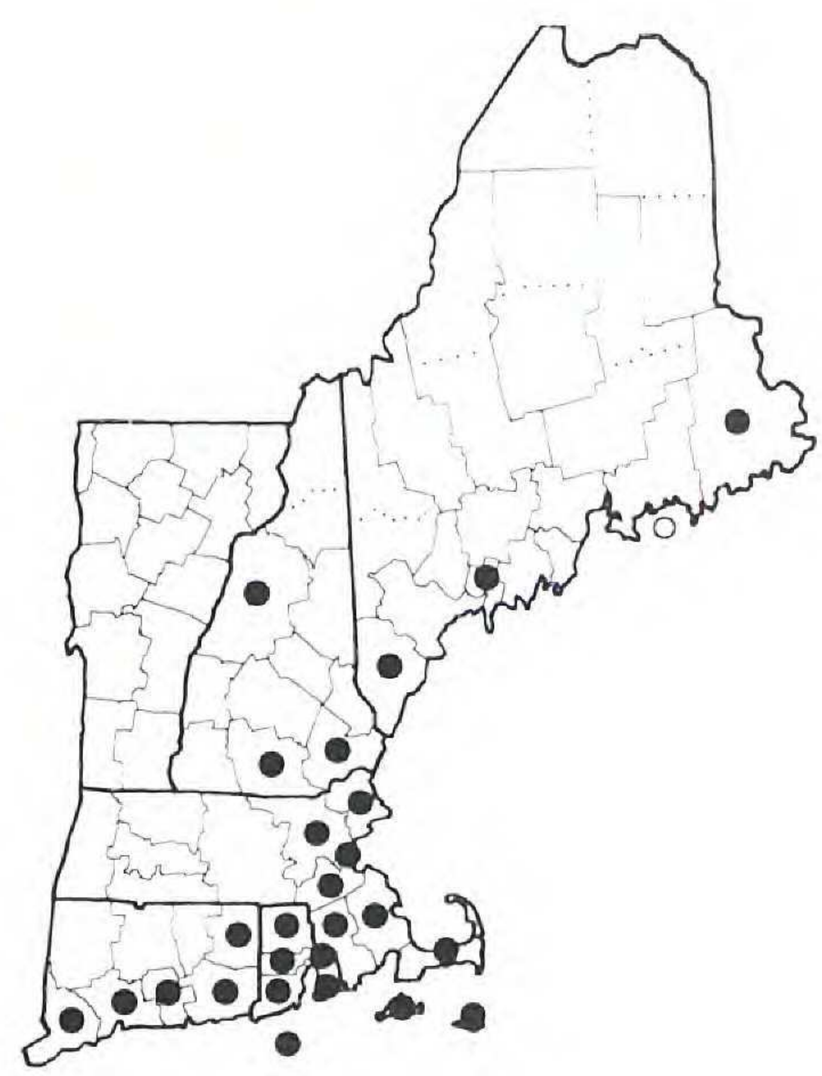
CROCUS VERNUS
subsp. *VERNUS*

IRIS CRISTATA

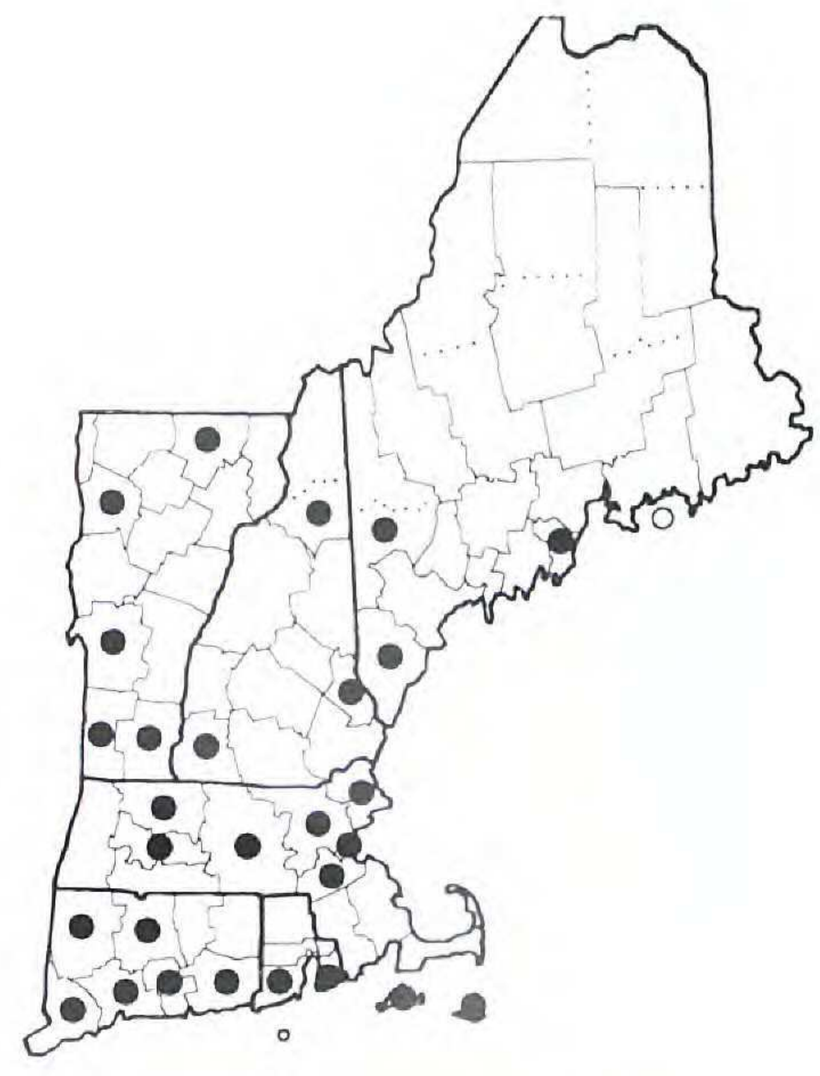
Figure 12. Distribution maps for *Vallisneria americana*, *BELAMCANDA CHINENSIS*, *CROCUS VERNUS* subsp. *VERNUS*, and *IRIS CRISTATA*.

IRIS GERMANICA

IRIS KAEMPFERI



Iris prismatica



IRIS PSEUDACORUS

Figure 13. Distribution maps for *IRIS GERMANICA, I. KAEMPFERI, I. prismatica,* and *I. PSEUDACORUS.*

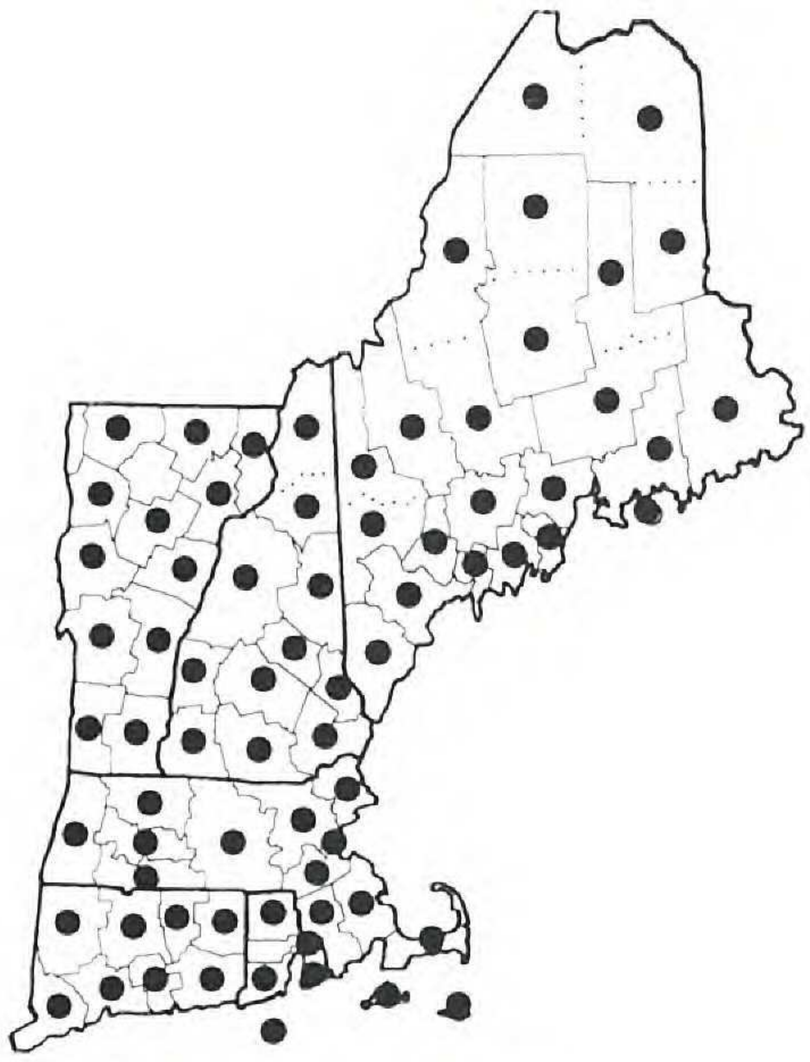
IRIS PUMILA
subsp. *PUMILA*

Iris setosa

IRIS SIBIRICA

IRIS TECTORUM

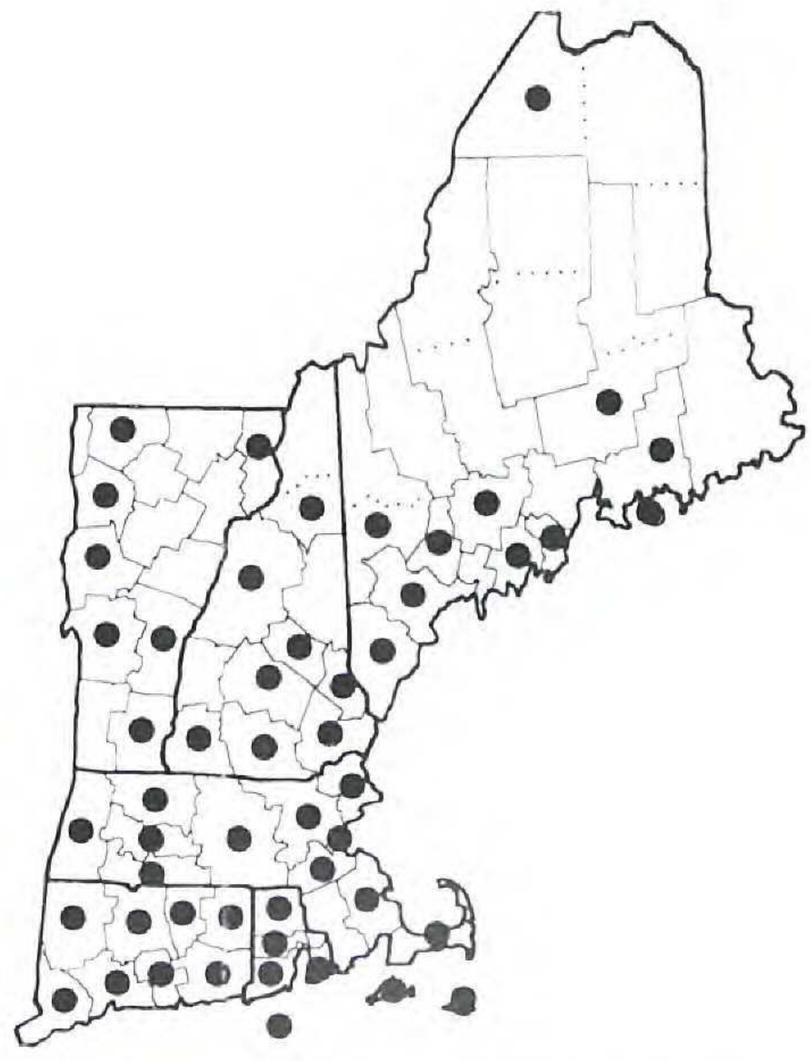
Figure 14. Distribution maps for *IRIS PUMILA* subsp. *PUMILA*, *I. setosa*, *I. SIBIRICA*, and *I. TECTORUM*.



Iris versicolor

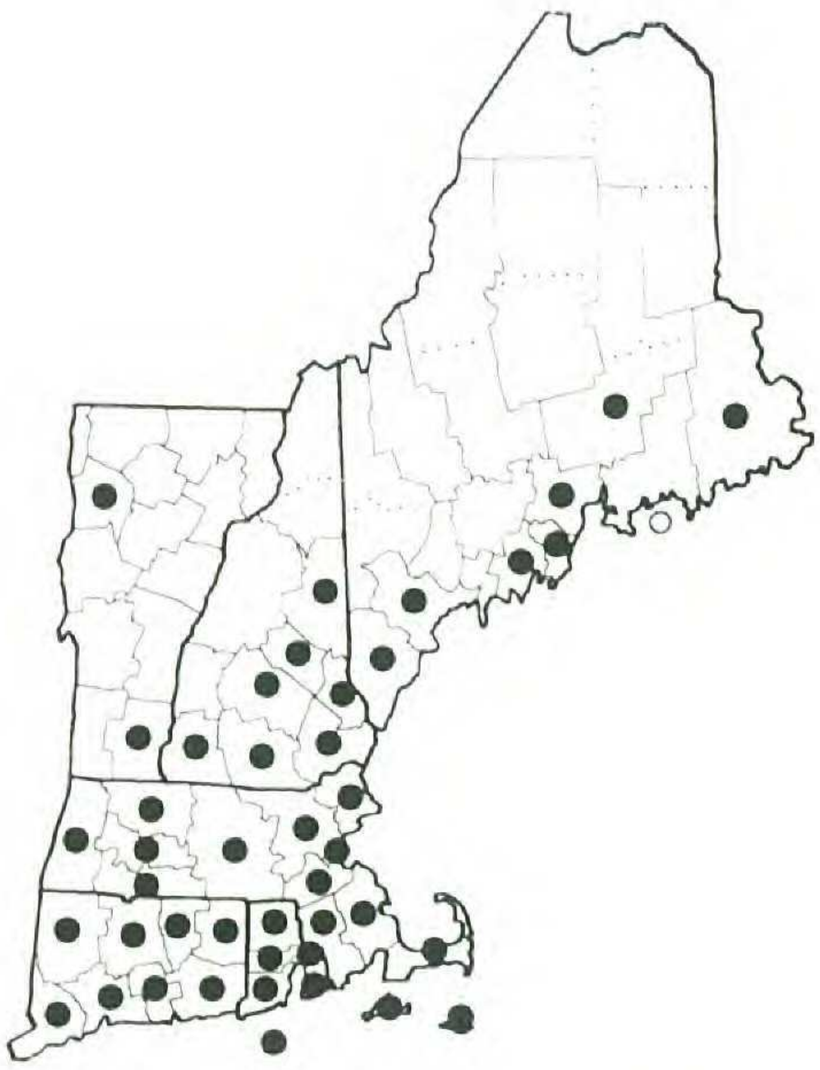
Iris prismatica
X *I. versicolor*

Sisyrinchium albidum



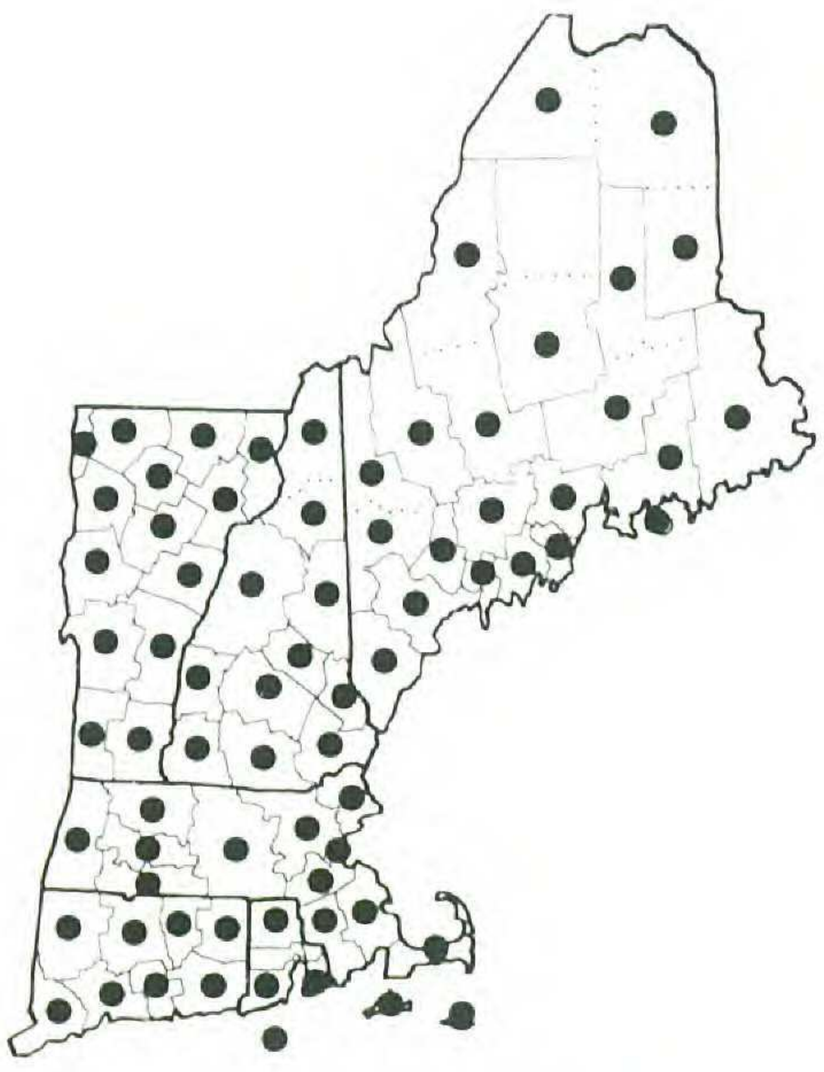
Sisyrinchium angustifolium

Figure 15. Distribution maps for *Iris versicolor, I. prismatica* X *I. versicolor, Sisyrinchium albidum,* and *S. angustifolium.*

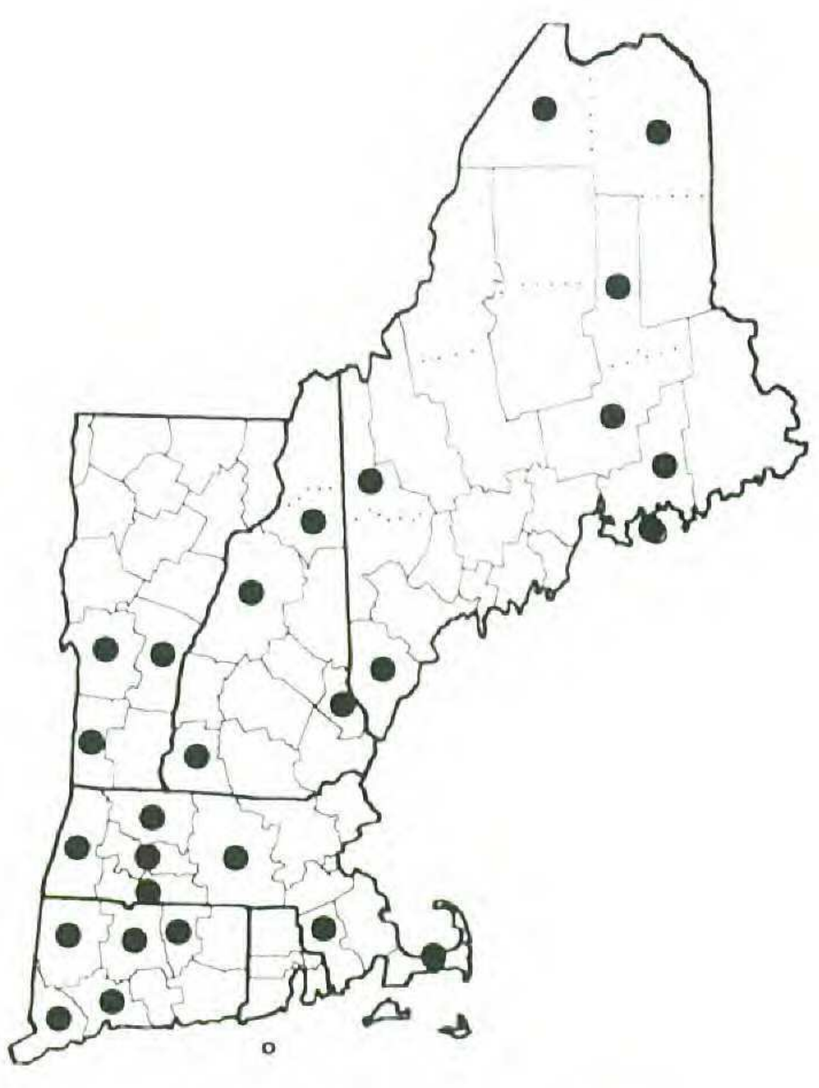


Sisyrinchium atlanticum

Sisyrinchium fuscatum

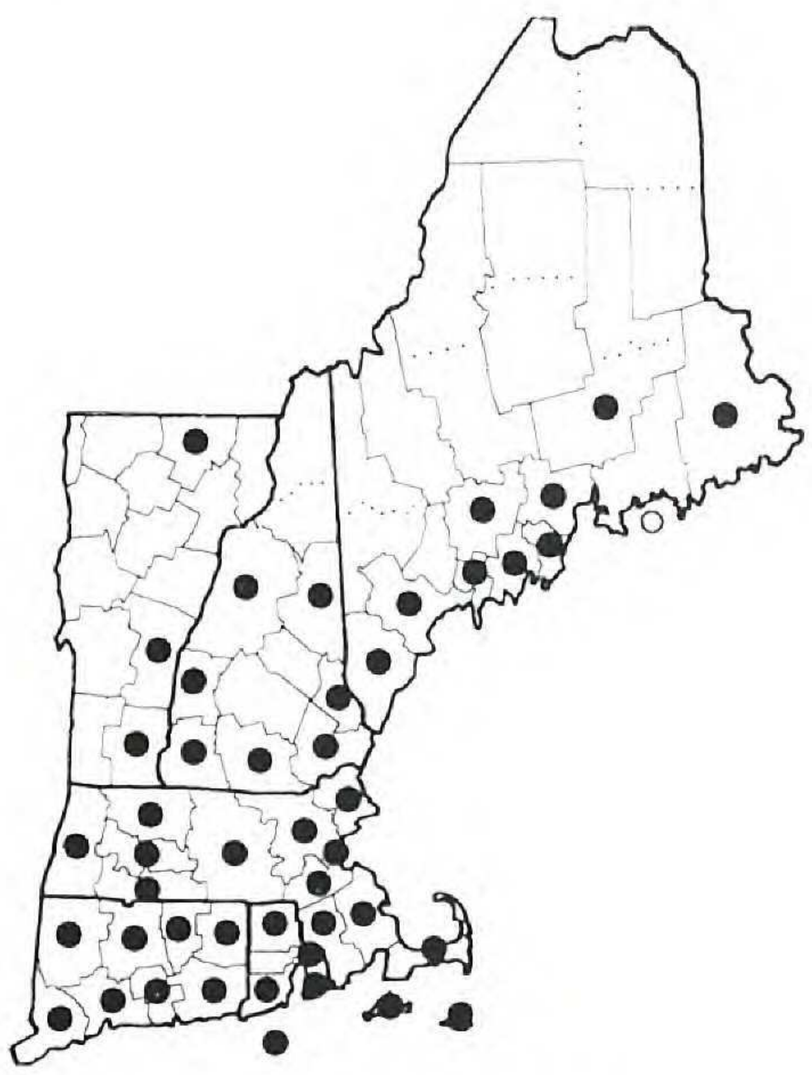


Sisyrinchium montanum
var. *crebrum*



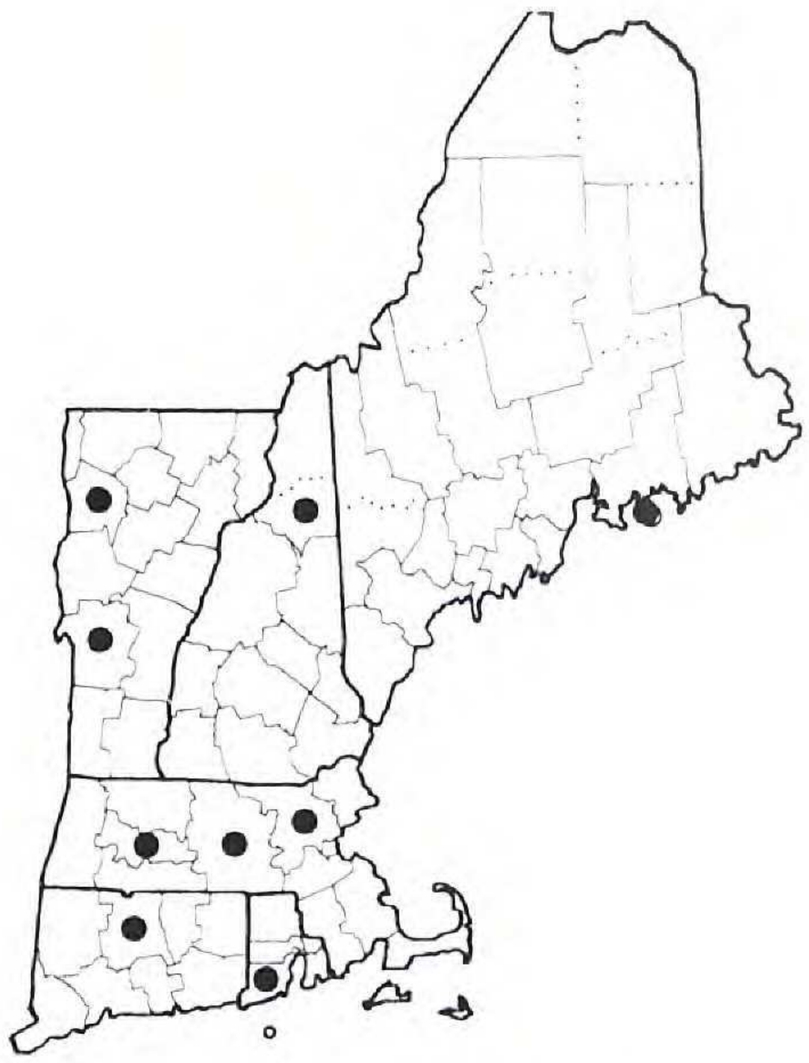
Sisyrinchium mucronatum

Figure 16. Distribution maps for *Sisyrinchium atlanticum, S. fuscatum, S. montanum* var. *crebrum,* and *S. mucronatum.*

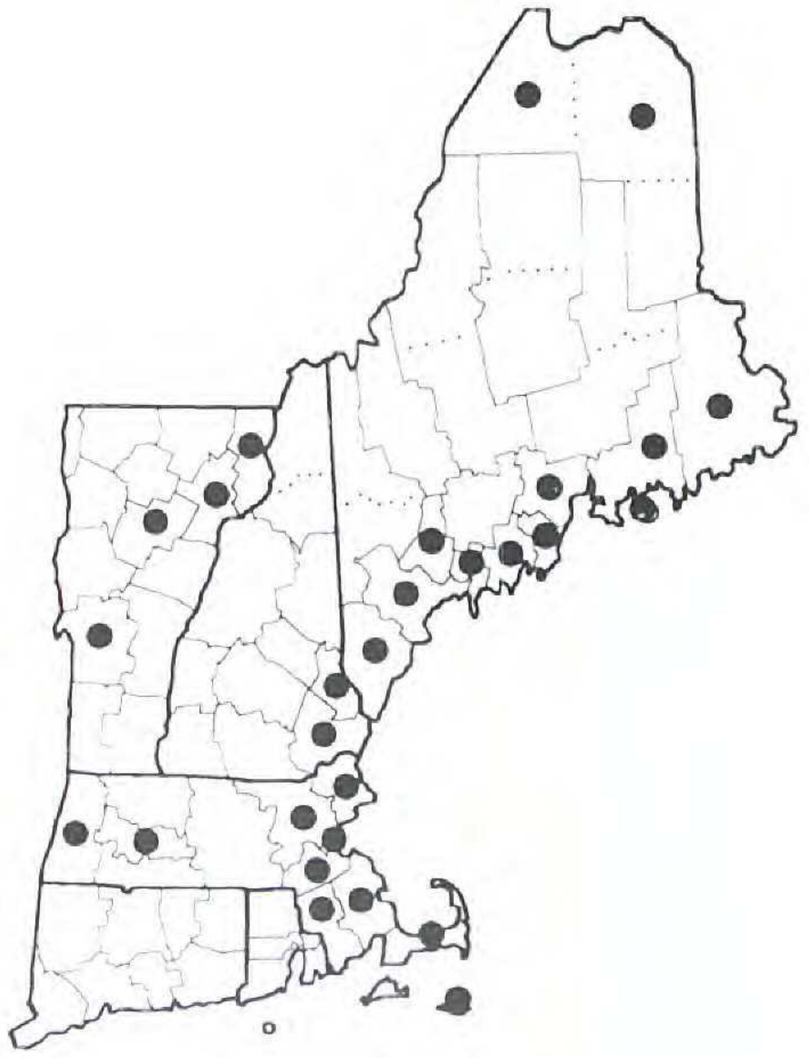


Juncus acuminatus

Juncus alpinoarticulatus

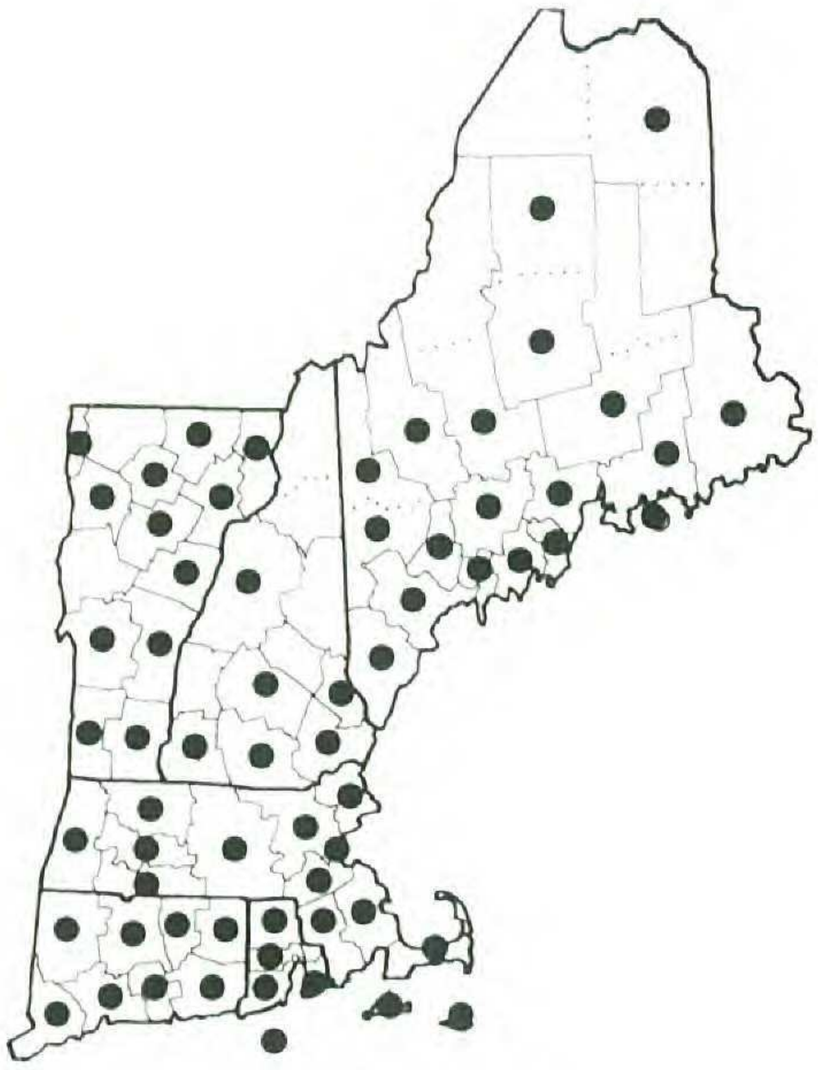


Juncus anthelatus



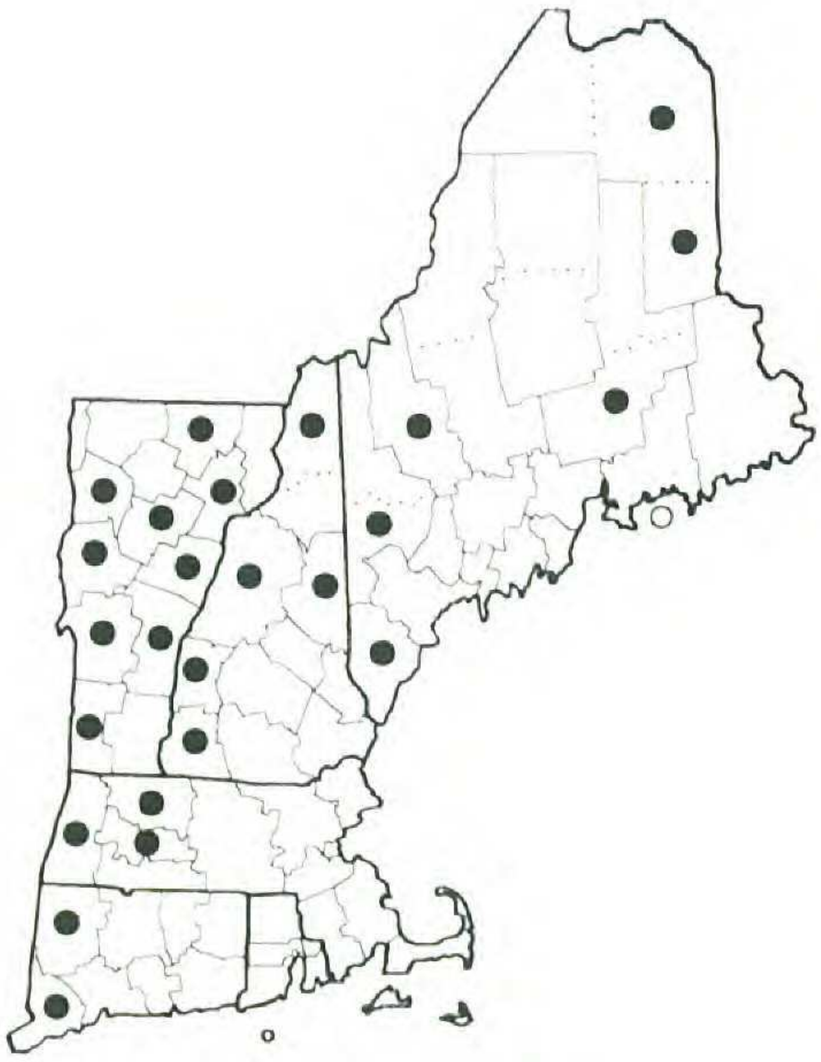
Juncus arcticus
var. *balticus*

Figure 17. Distribution maps for *Juncus acuminatus*, *J. alpinoarticulatus*, *J. anthelatus*, and *J. arcticus* var. *balticus*.

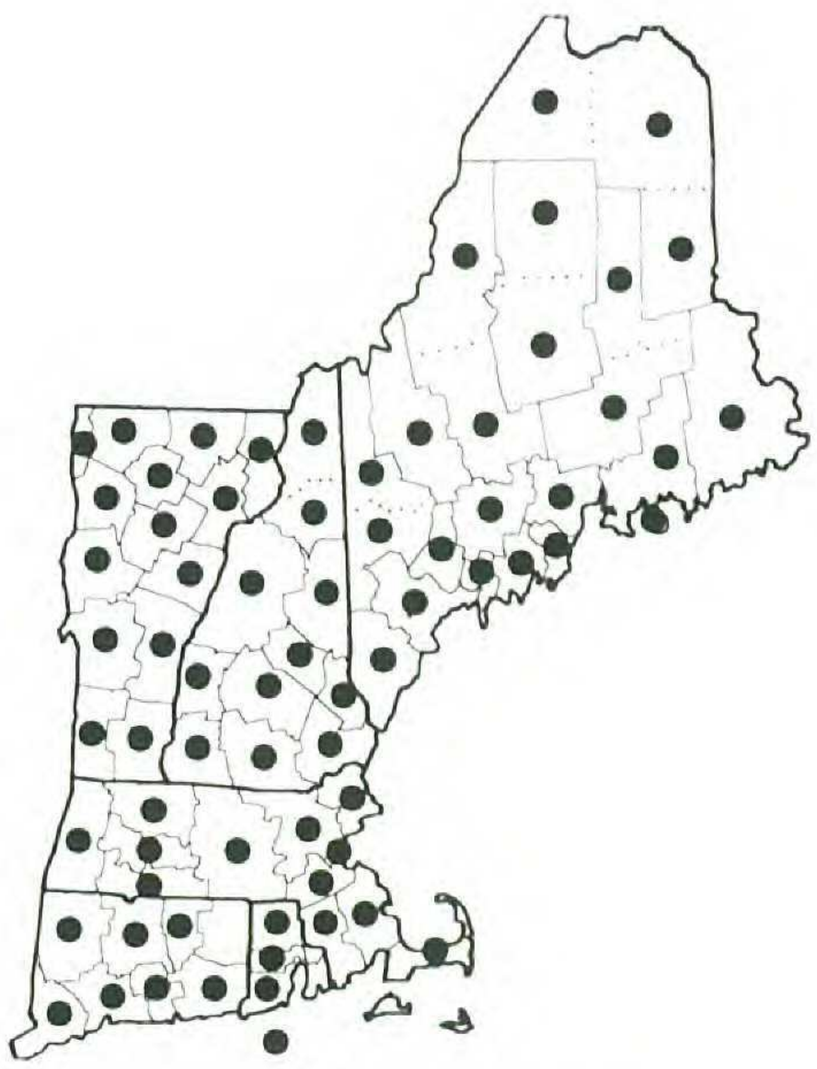


Juncus articulatus

Juncus brachycarpus

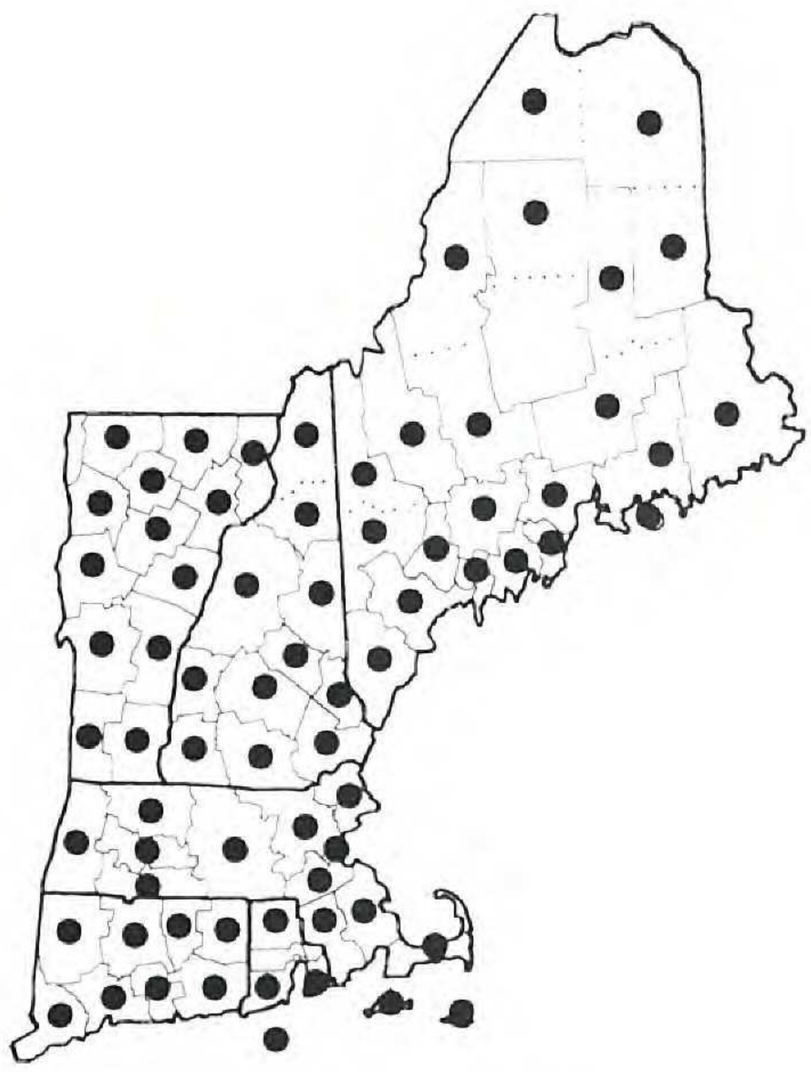


Juncus brachycephalus

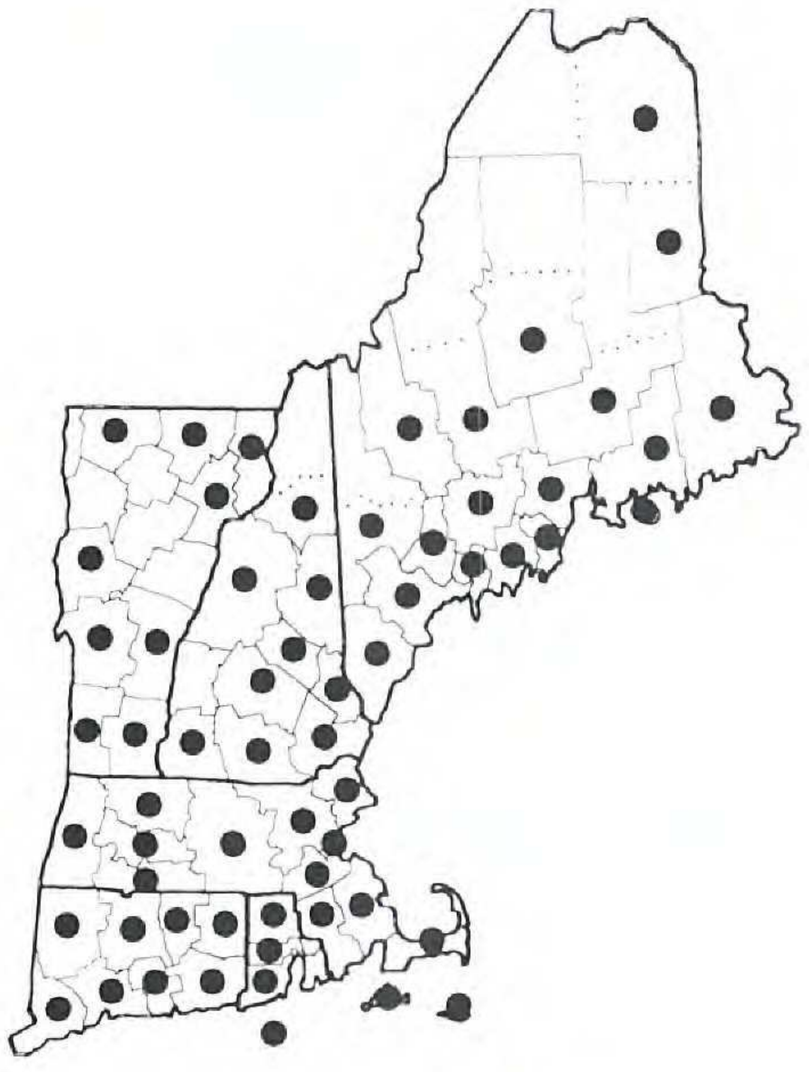


Juncus brevicaudatus

Figure 18. Distribution maps for *Juncus articulatus*, *J. brachycarpus*, *J. brachycephalus*, and *J. brevicaudatus*.



Juncus bufonius

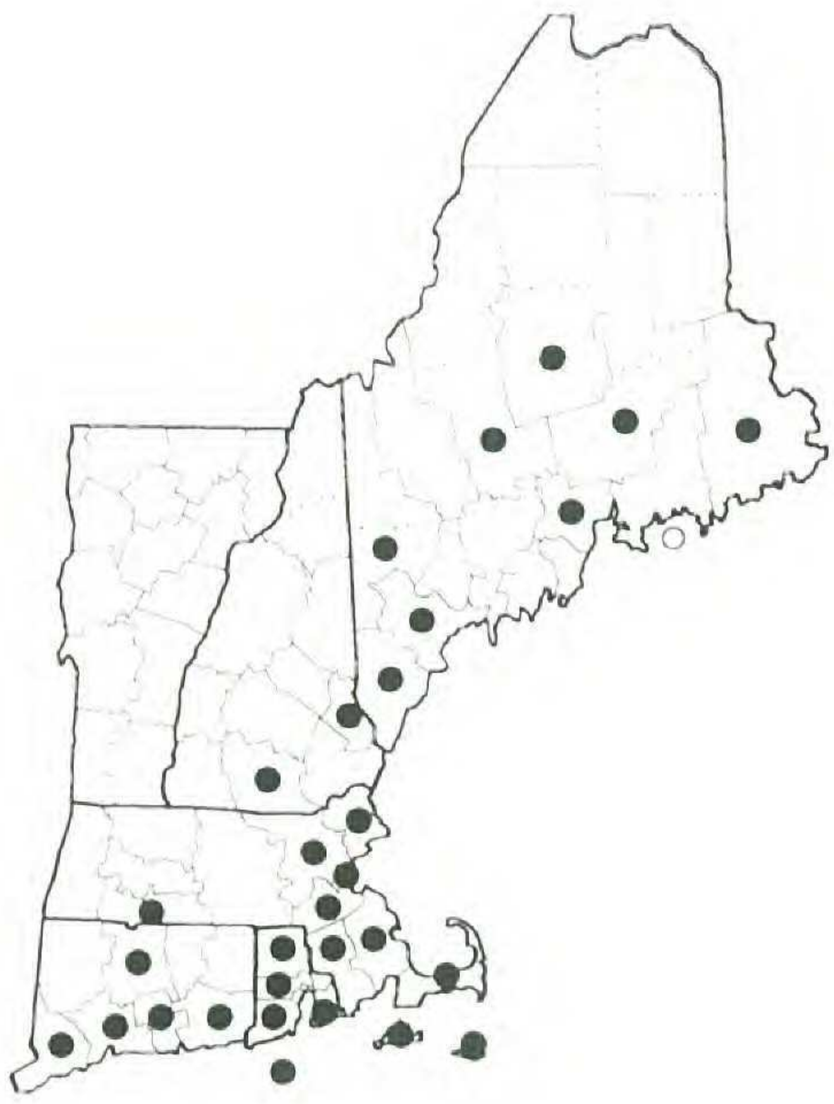


Juncus canadensis

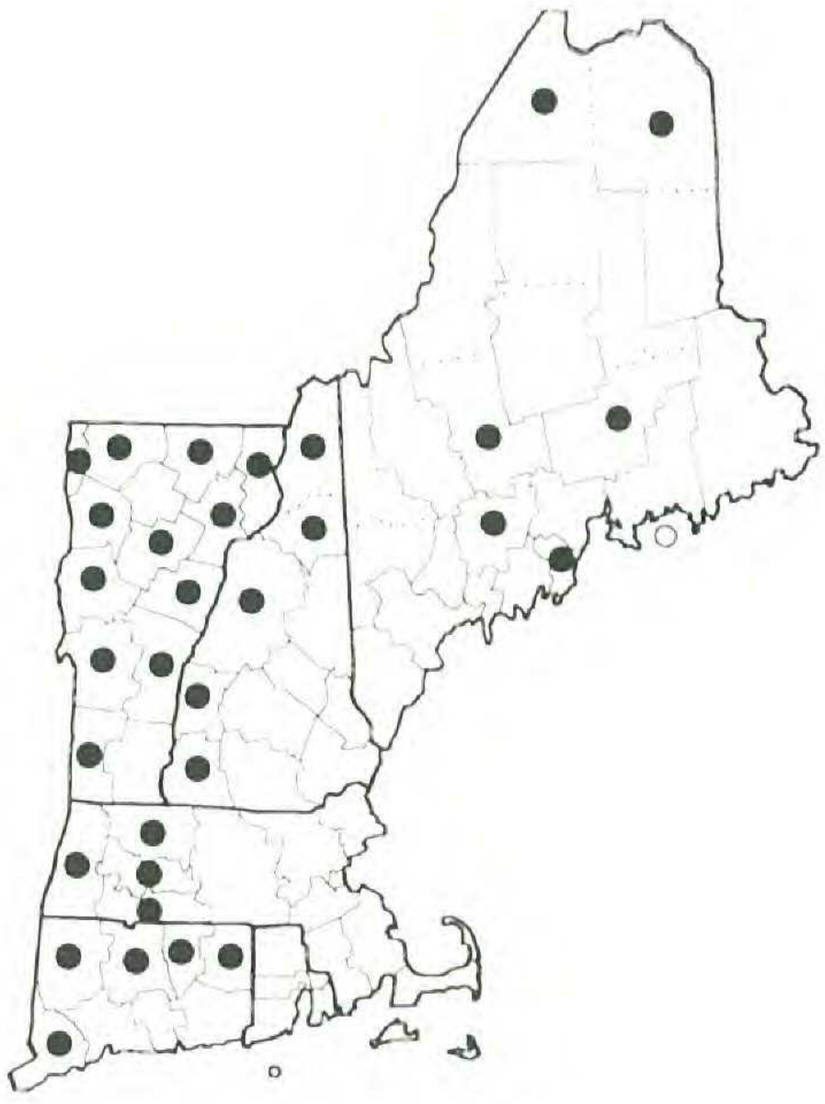
JUNCUS COMPRESSUS

Juncus debilis

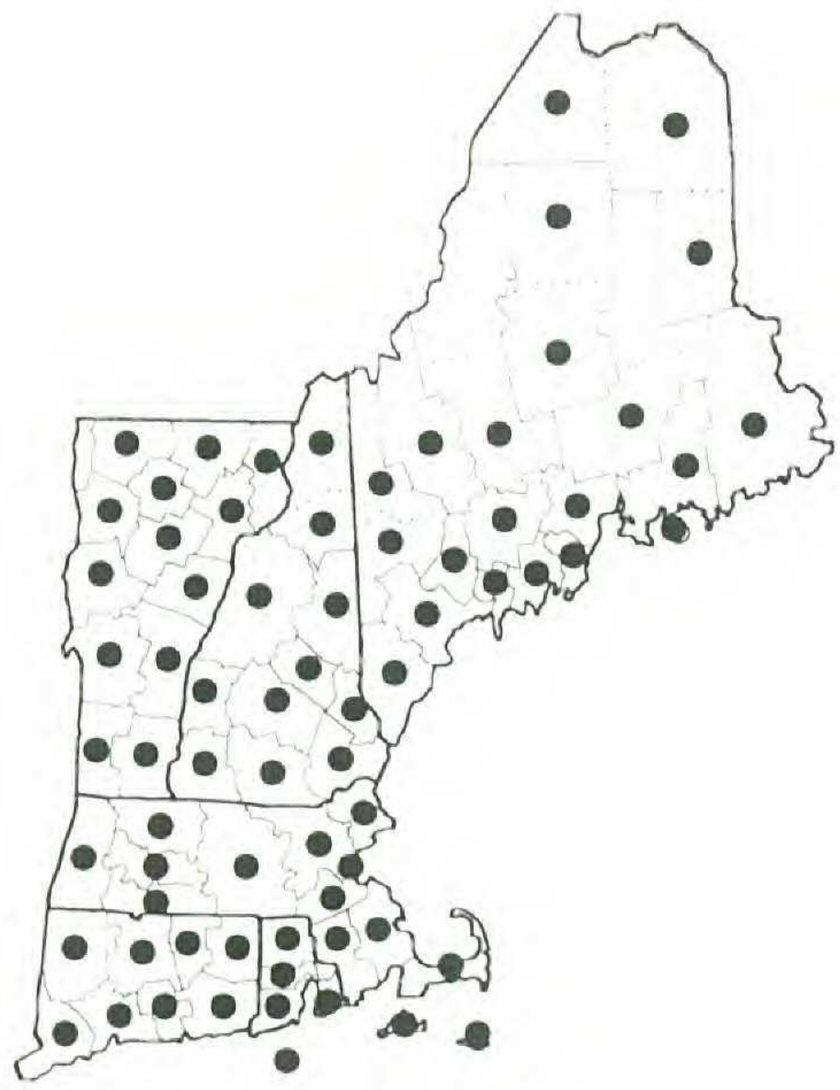
Figure 19. Distribution maps for *Juncus bufonius, J. canadensis, J. COMPRESSUS,* and *J. debilis.*



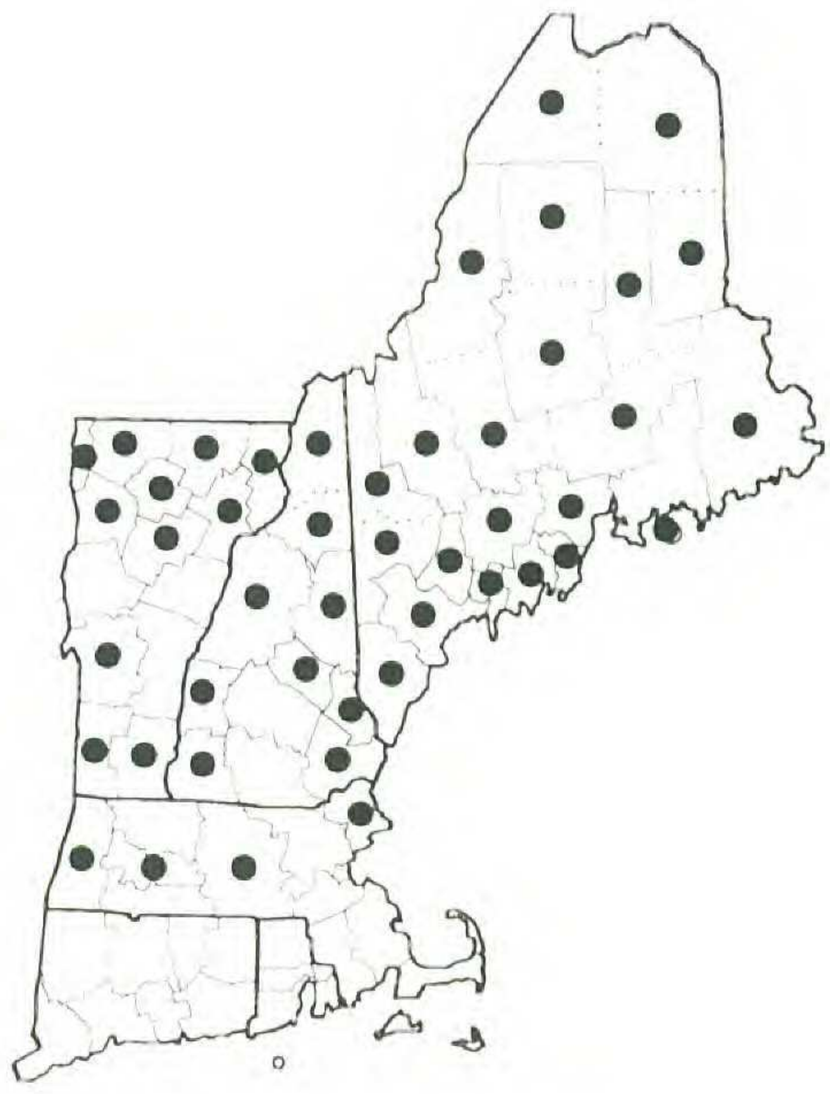
Juncus dichotomus



Juncus dudleyi

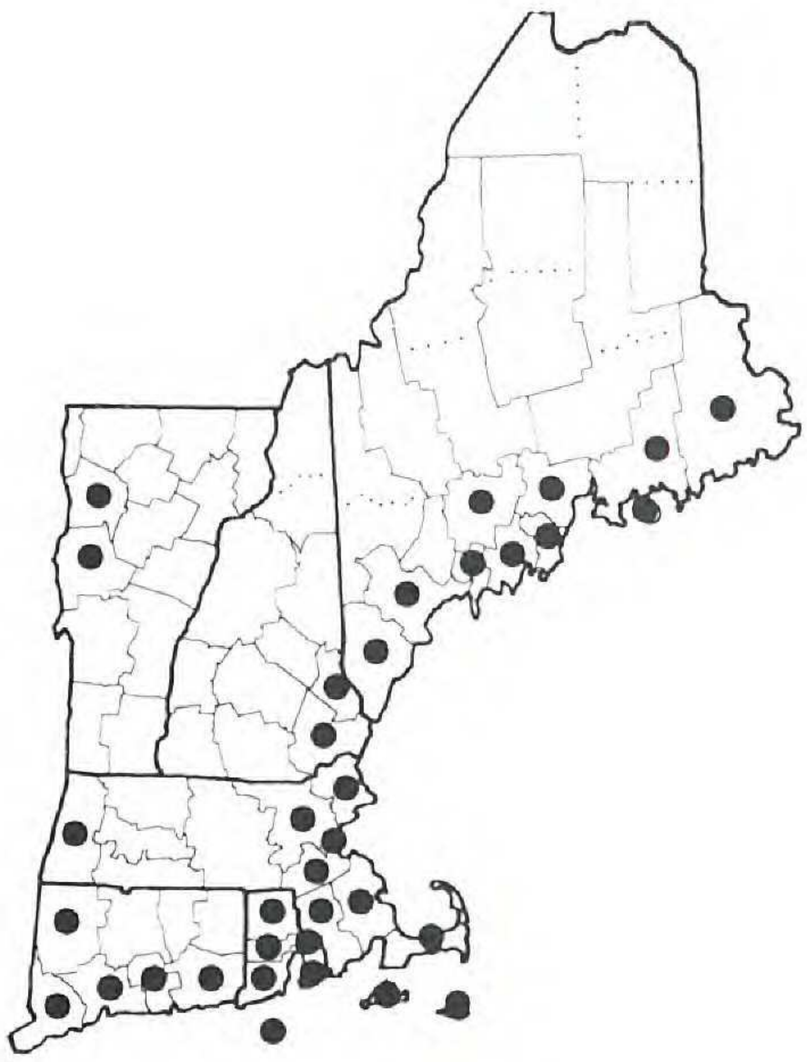


Juncus effusus

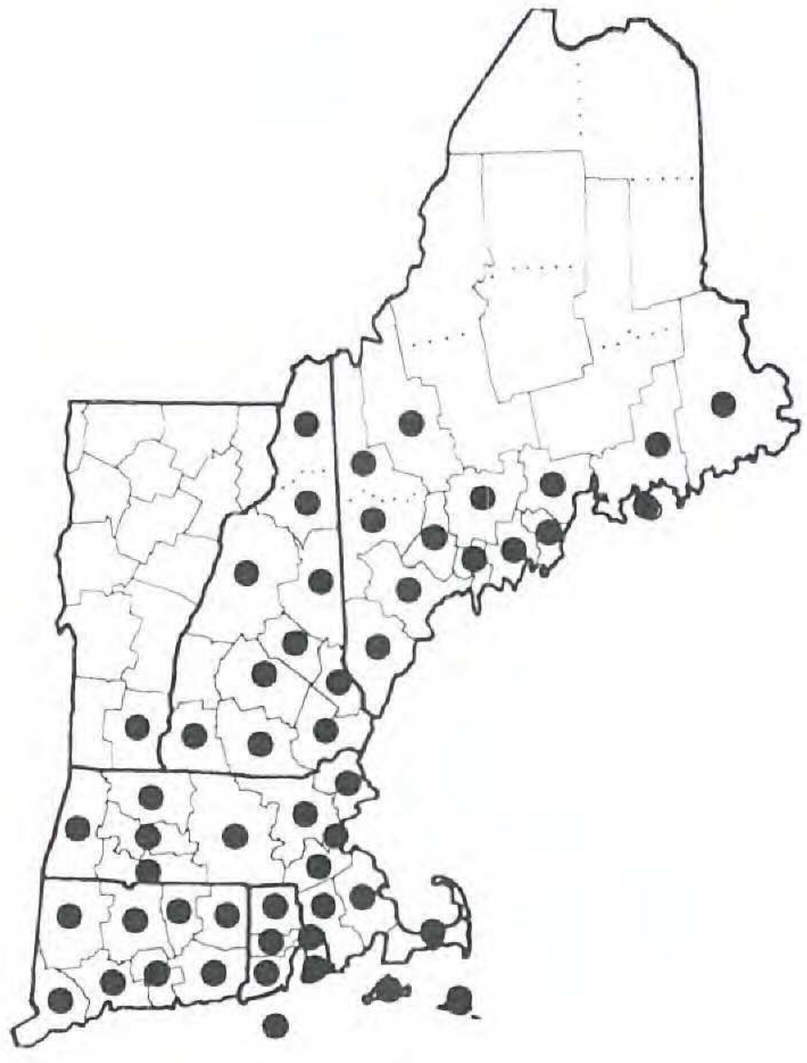


Juncus filiformis

Figure 20. Distribution maps for *Juncus dichotomus, J. dudleyi, J. effusus,* and *J. filiformis.*

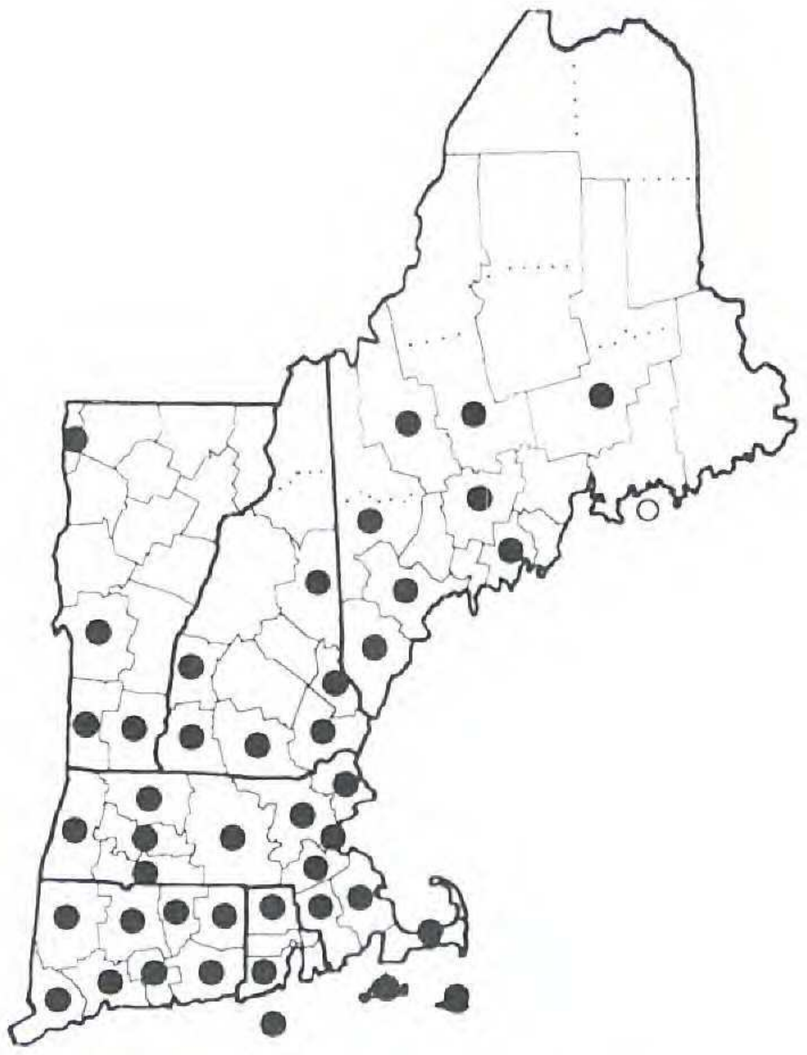


Juncus gerardii



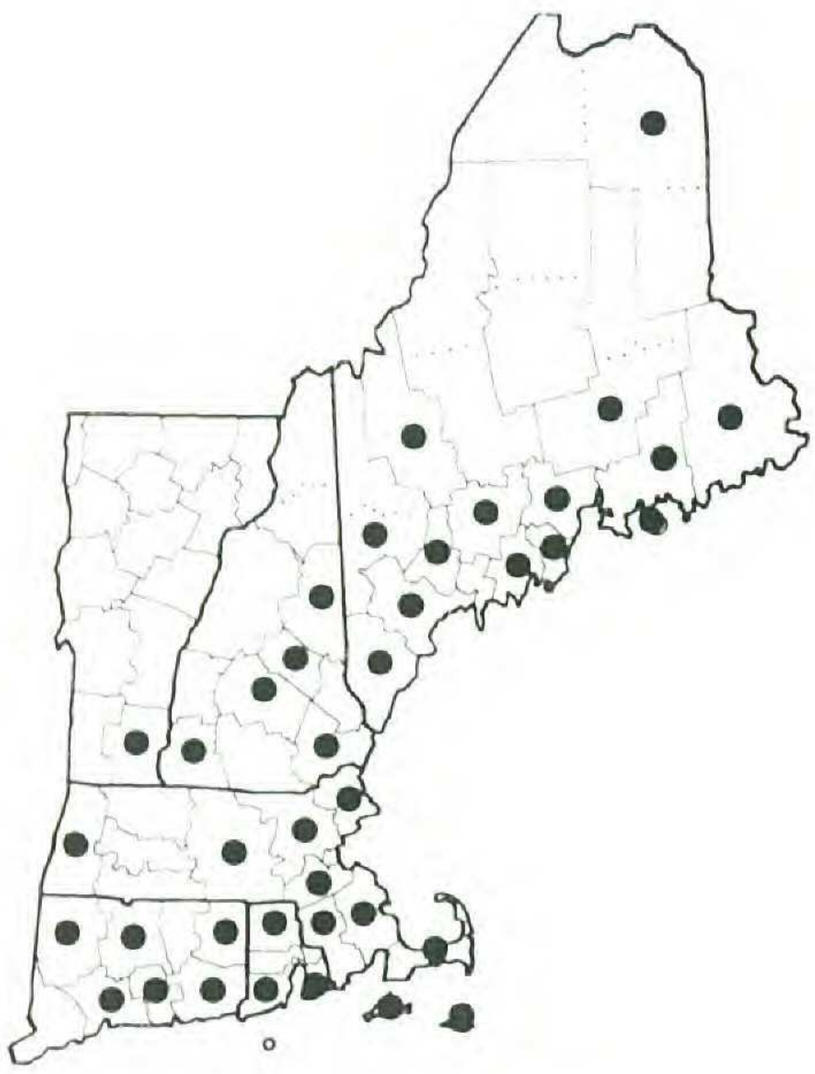
Juncus greenei

JUNCUS INFLEXUS

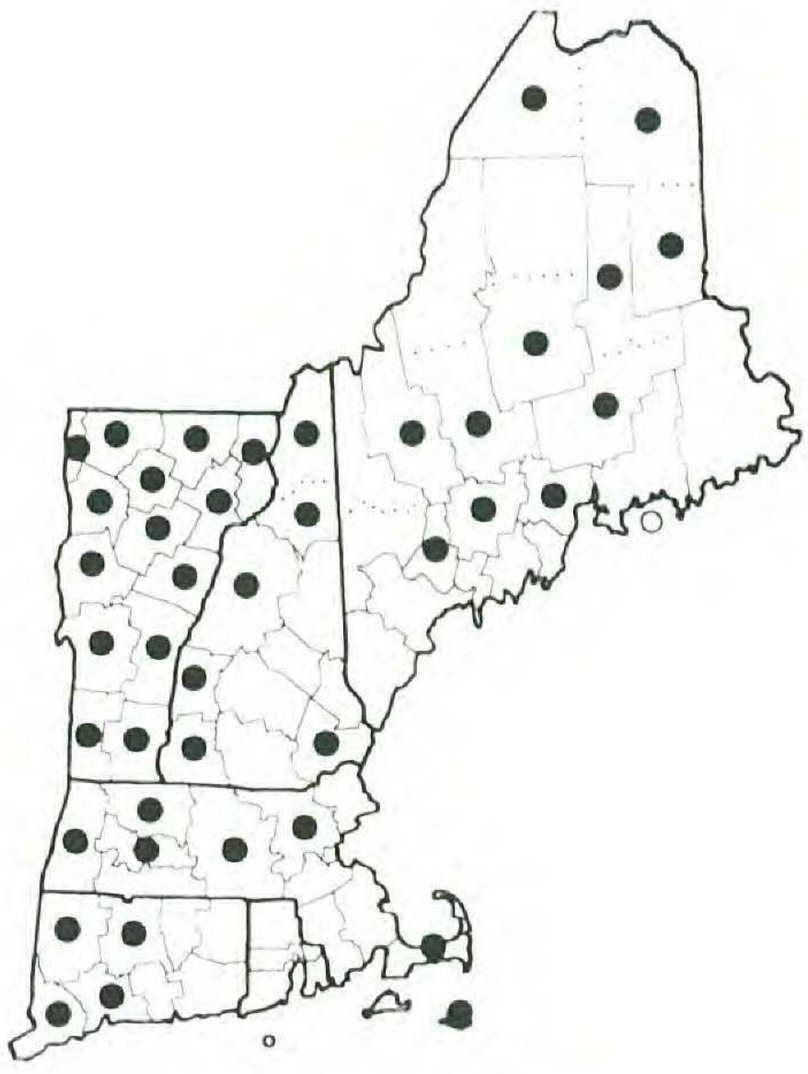


Juncus marginatus

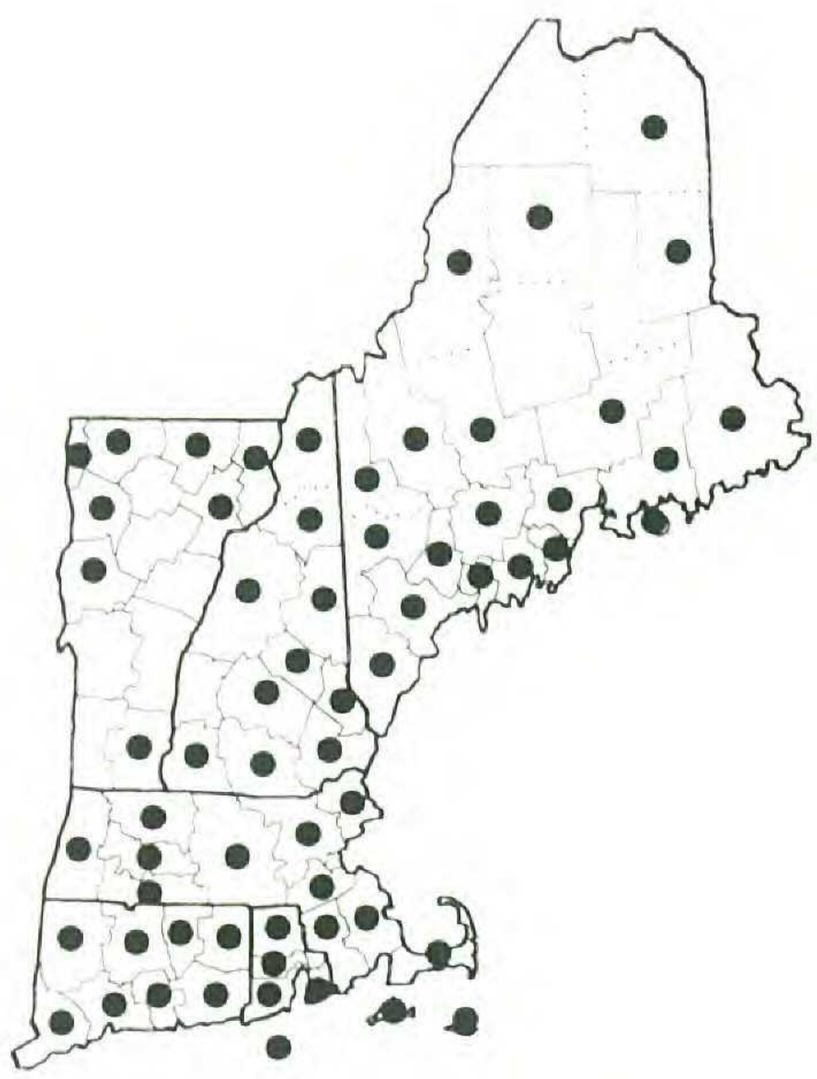
Figure 21. Distribution maps for *Juncus gerardii, J. greenei, J. INFLEXUS,* and *J. marginatus.*



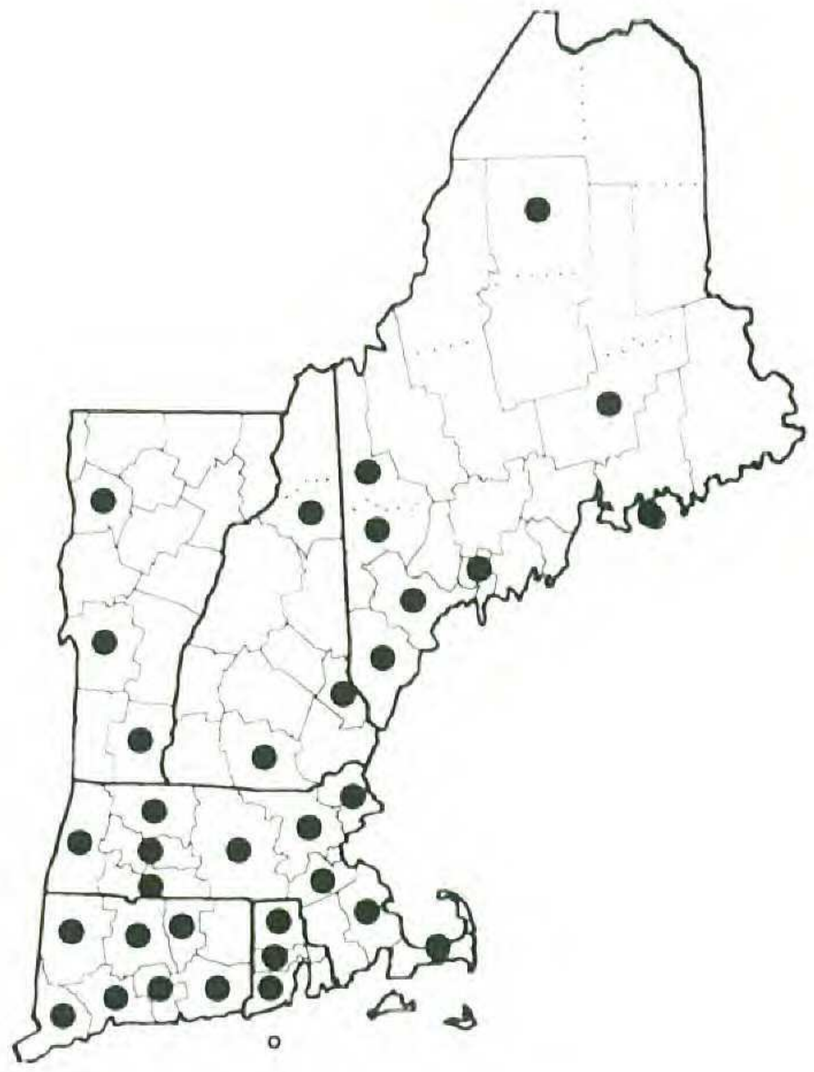
Juncus militaris



Juncus nodosus
var. *nodosus*



Juncus pelocarpus



Juncus secundus

Figure 22. Distribution maps for *Juncus militaris, J. nodosus* var. *nodosus, J. pelocarpus,* and *J. secundus.*

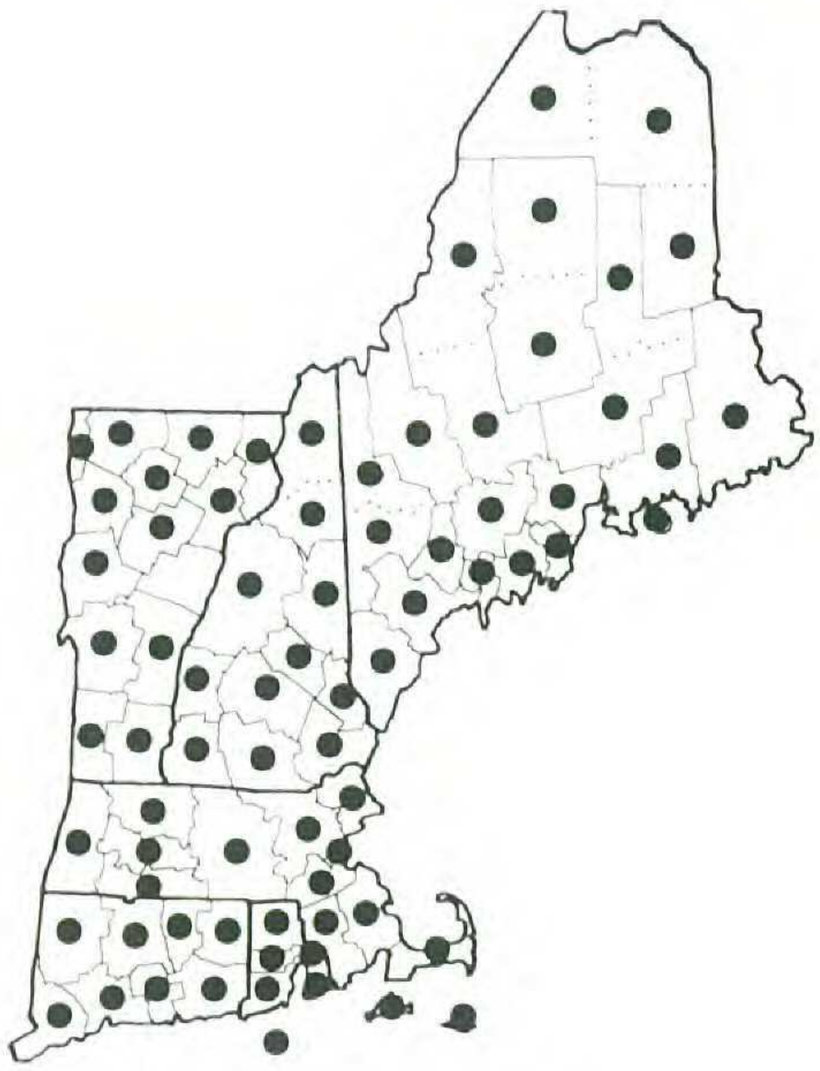
Juncus stygius
var. *americanus*

Juncus subcaudatus

JUNCUS SUBNODULOSUS

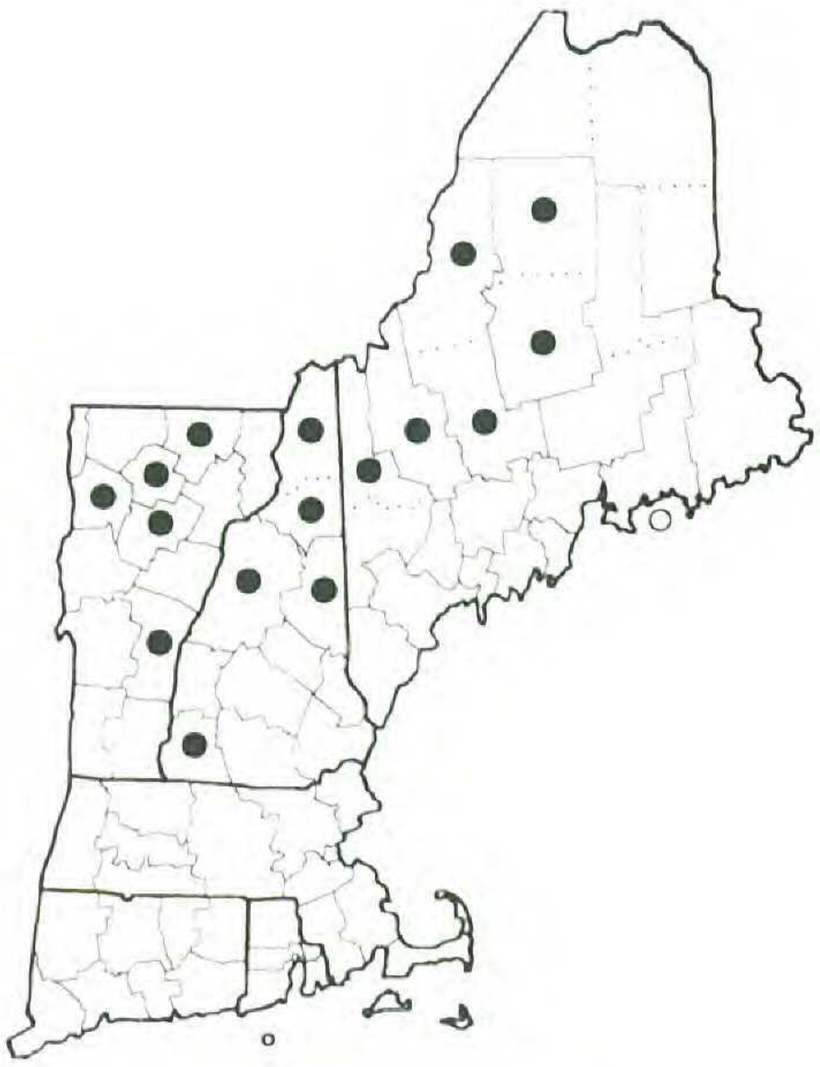
Juncus subtilis

Figure 23. Distribution maps for *Juncus stygius* var. *americanus*, *J. subcaudatus*, *J. SUBNODULOSUS*, and *J. subtilis*.

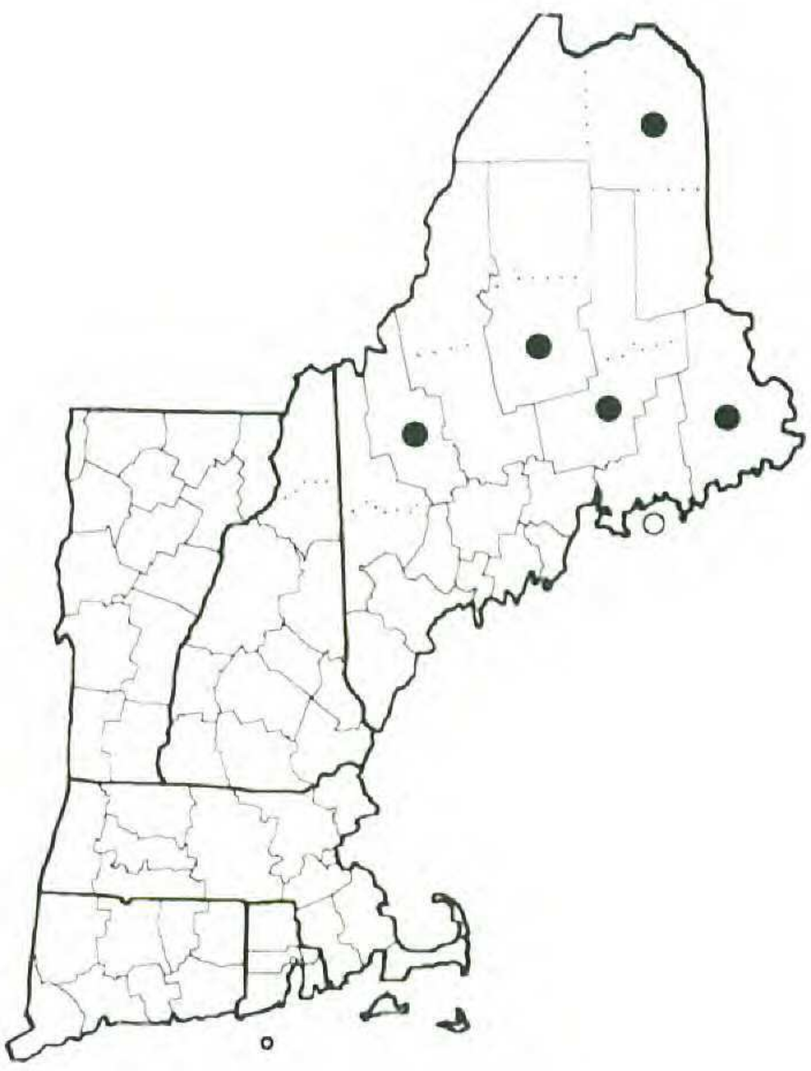


Juncus tenuis

JUNCUS TORREYI



Juncus trifidus

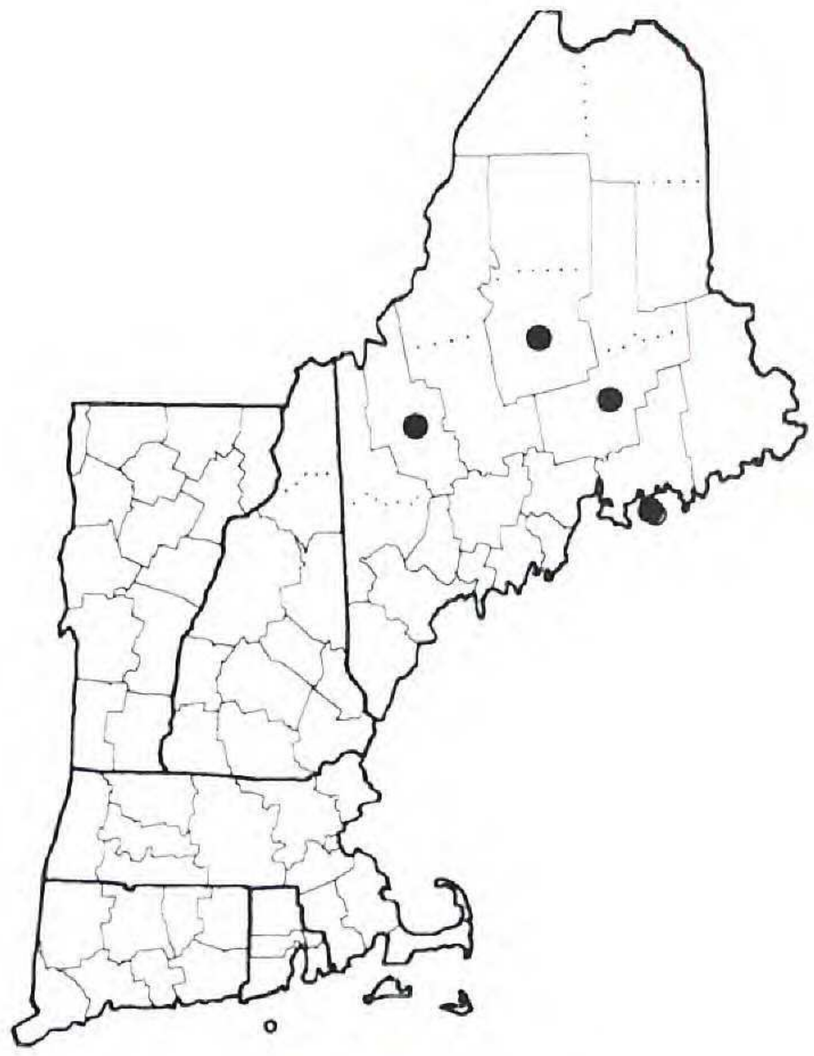


Juncus vaseyi

Figure 24. Distribution maps for *Juncus tenuis, J. TORREYI, J. trifidus,* and *J. vaseyi.*

Juncus articulatus
X *J. brevicaudatus*

Juncus brevicaudatus
X *J. nodosus* var. *nodusus*

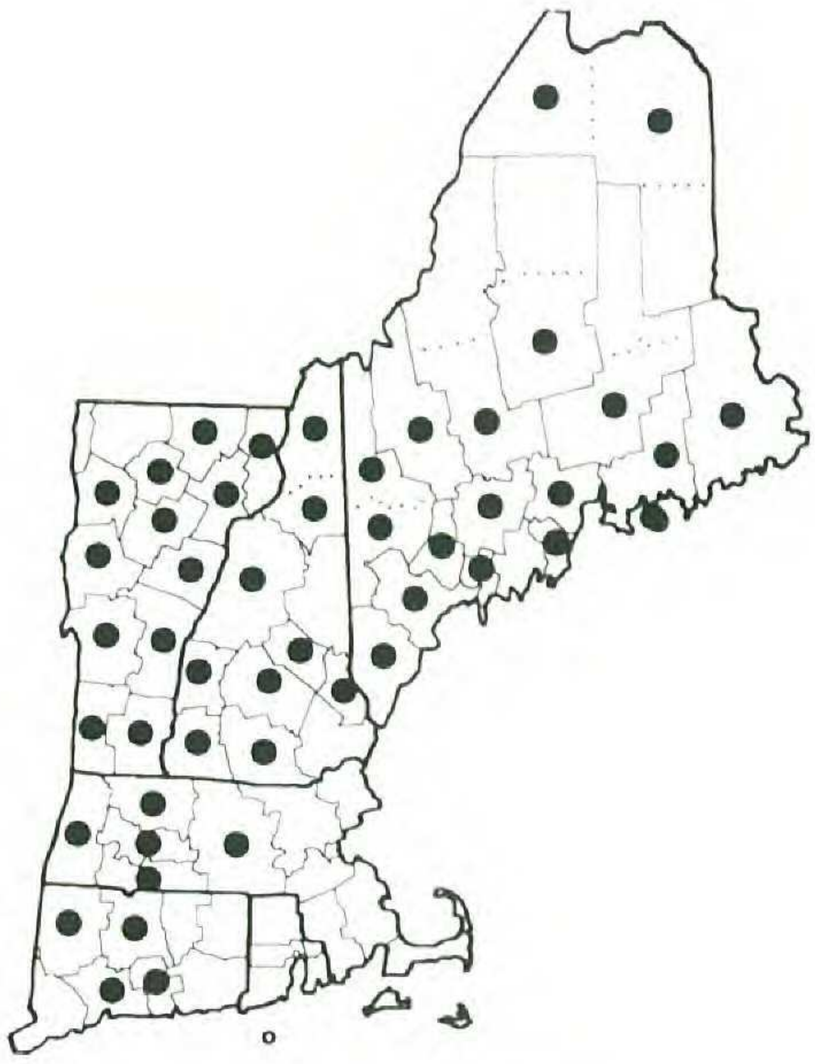


Juncus X *oronensis*

Juncus secundus
X *J. tenuis*

Figure 25. Distribution maps for *Juncus articulatus* X *J. brevicaudatus*, *J. brevicaudatus* X *J. nodosus* var. *nodosus*, *J.* X *oronensis*, and *J. secundus* X *J. tenuis*.

Juncus tenuis
X *J. vaseyi*

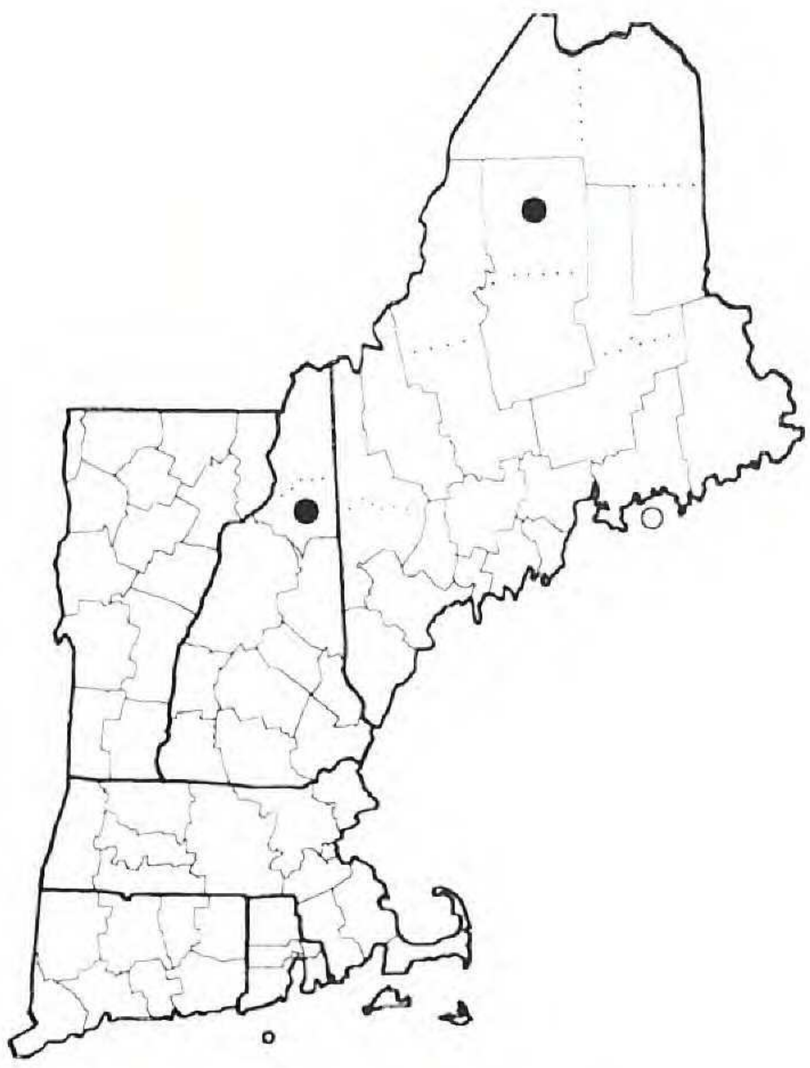


Luzula acuminata
var. *acuminata*

Luzula bulbosa

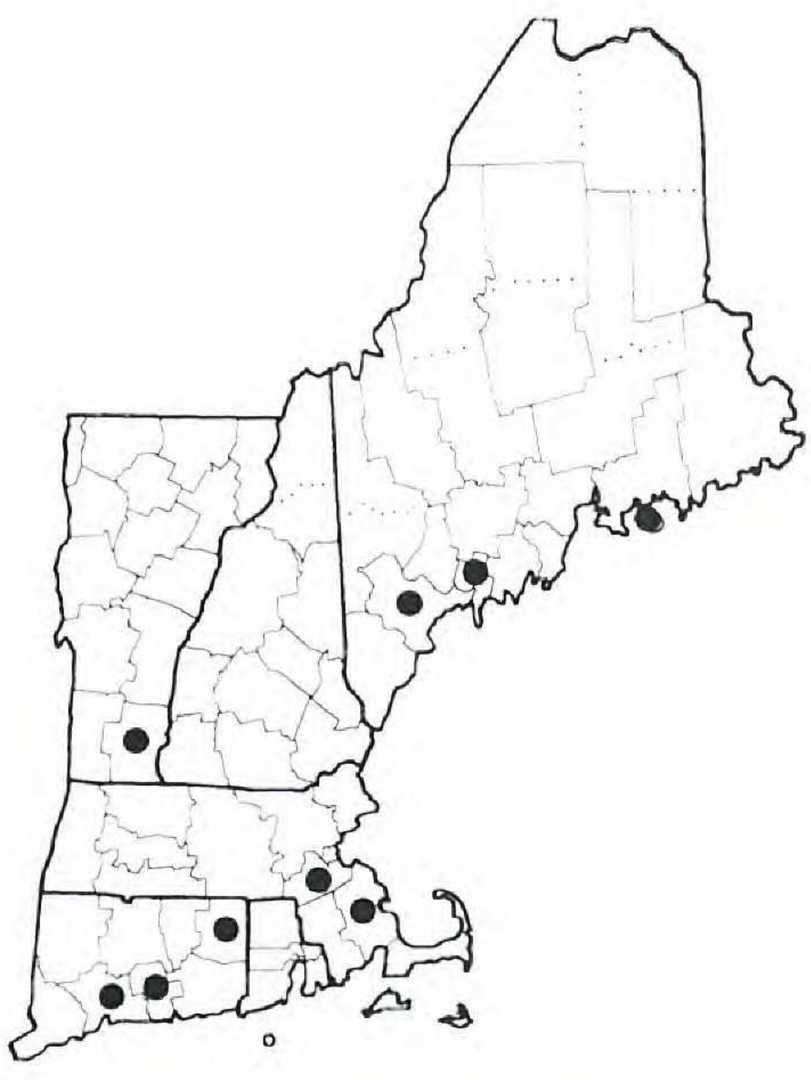
LUZULA CAMPESTRIS

Figure 26. Distribution maps for *Juncus tenuis* X *J. vaseyi, Luzula acuminata* var. *acuminata, L. bulbosa,* and *L. CAMPESTRIS.*

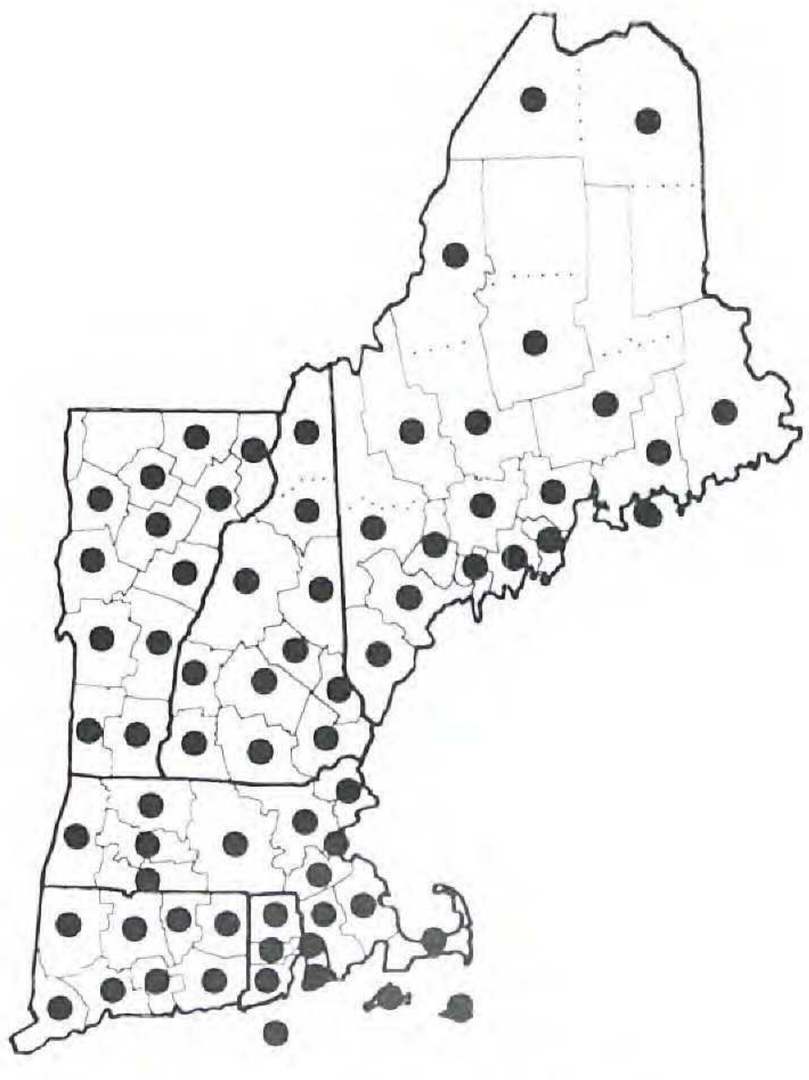


Luzula confusa

Luzula echinata

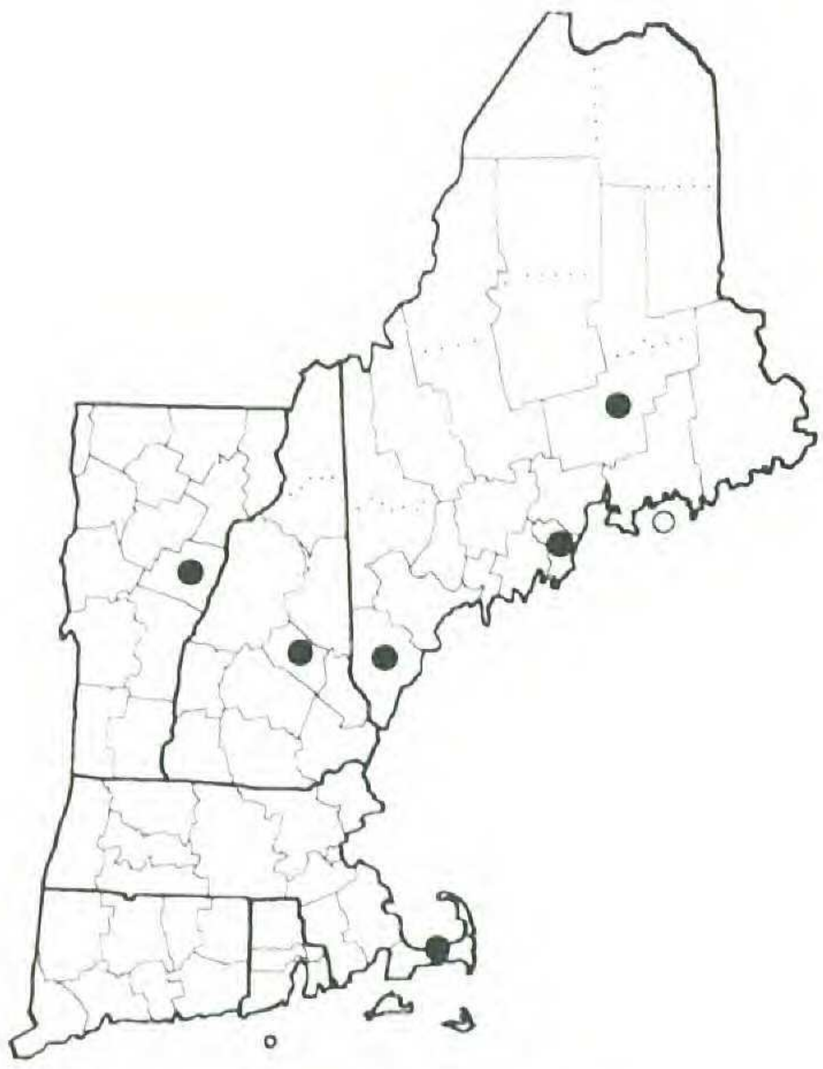


LUZULA LUZULOIDES
subsp. *LUZULOIDES*



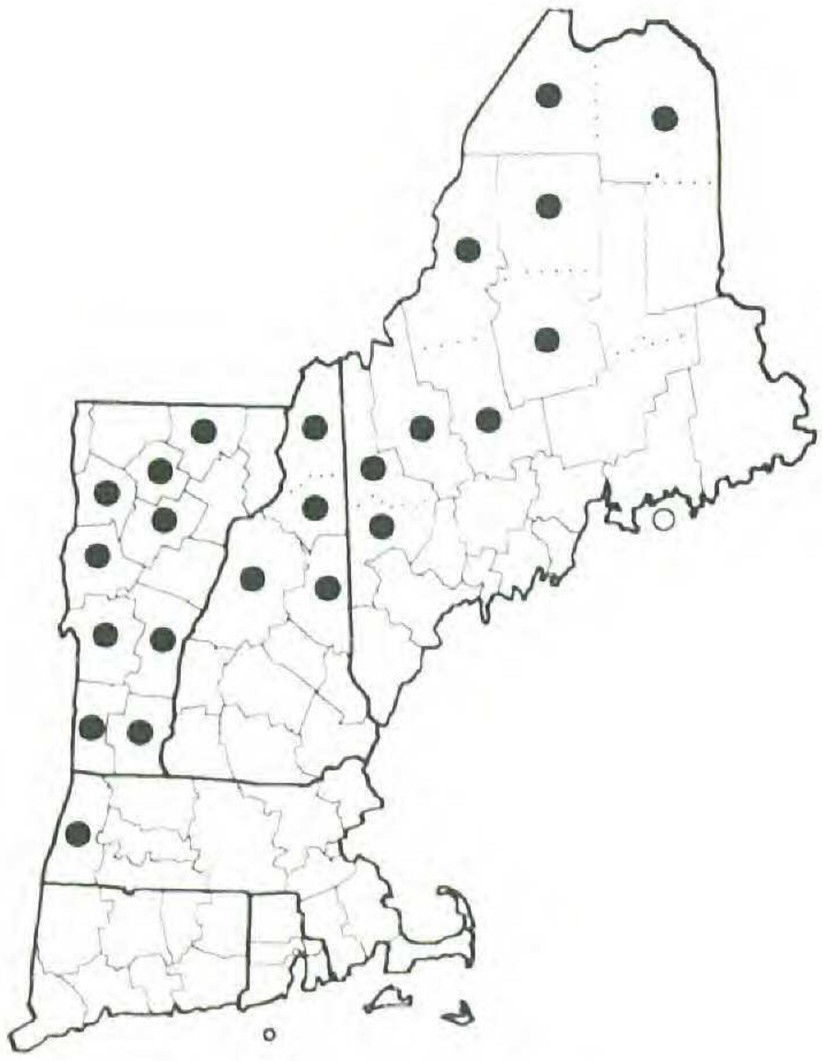
Luzula multiflora
subsp. *multiflora*

Figure 27. Distribution maps for *Luzula confusa, L. echinata,* *L. LUZULOIDES* subsp. *LUZULOIDES,* and *L. multiflora* subsp. *multiflora.*

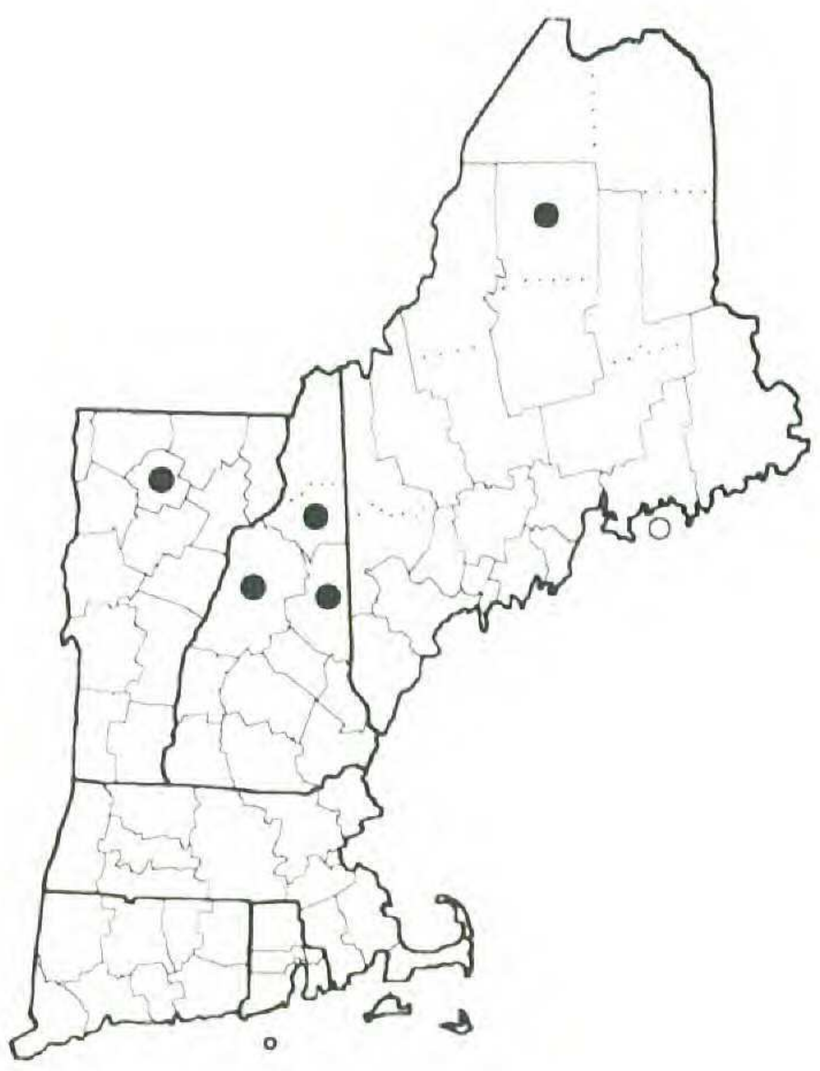


Luzula multiflora
subsp. *frigida*

LUZULA PALLIDULA



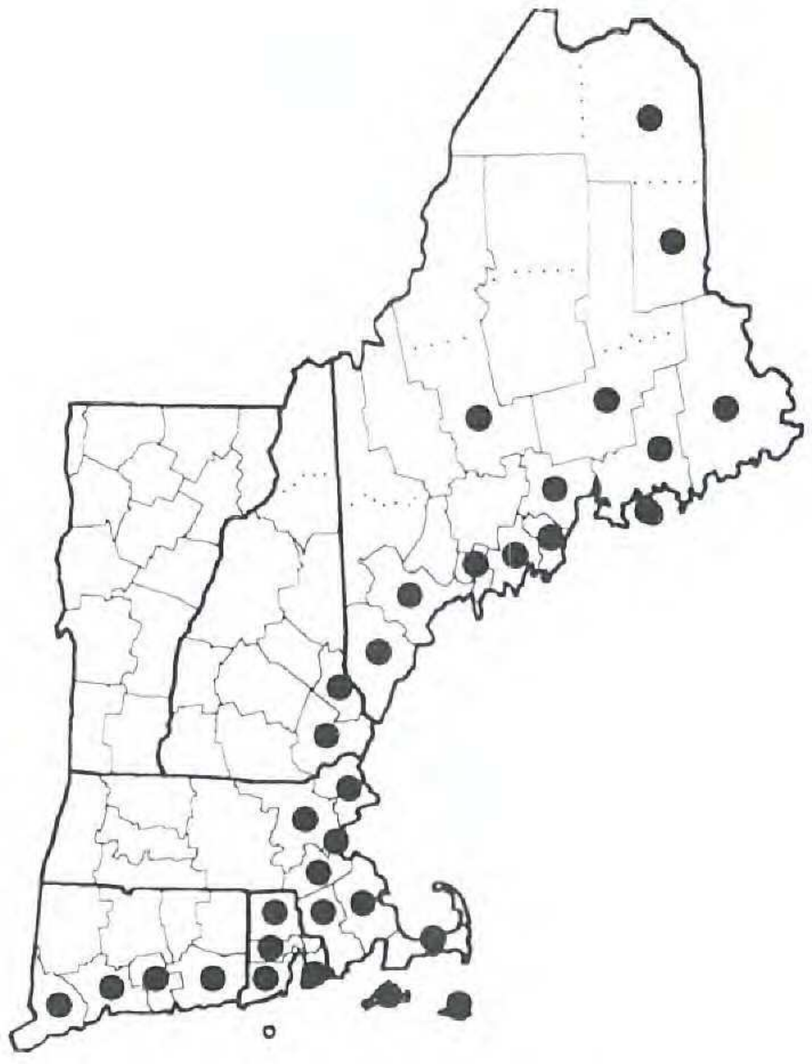
Luzula parviflora
var. *melanocarpa*



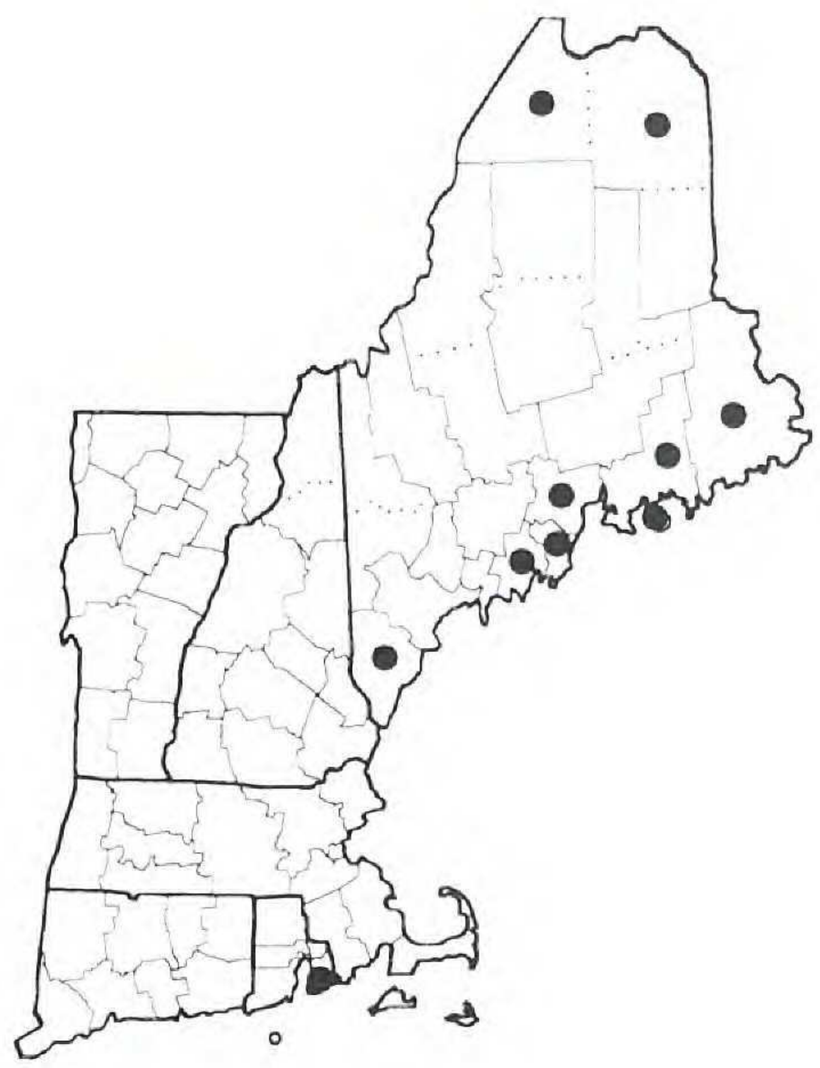
Luzula spicata

Figure 28. Distribution maps for *Luzula multiflora* subsp. *frigida*, *L. PALLIDULA*, *L. parviflora* var. *melanocarpa*, and *L. spicata*.

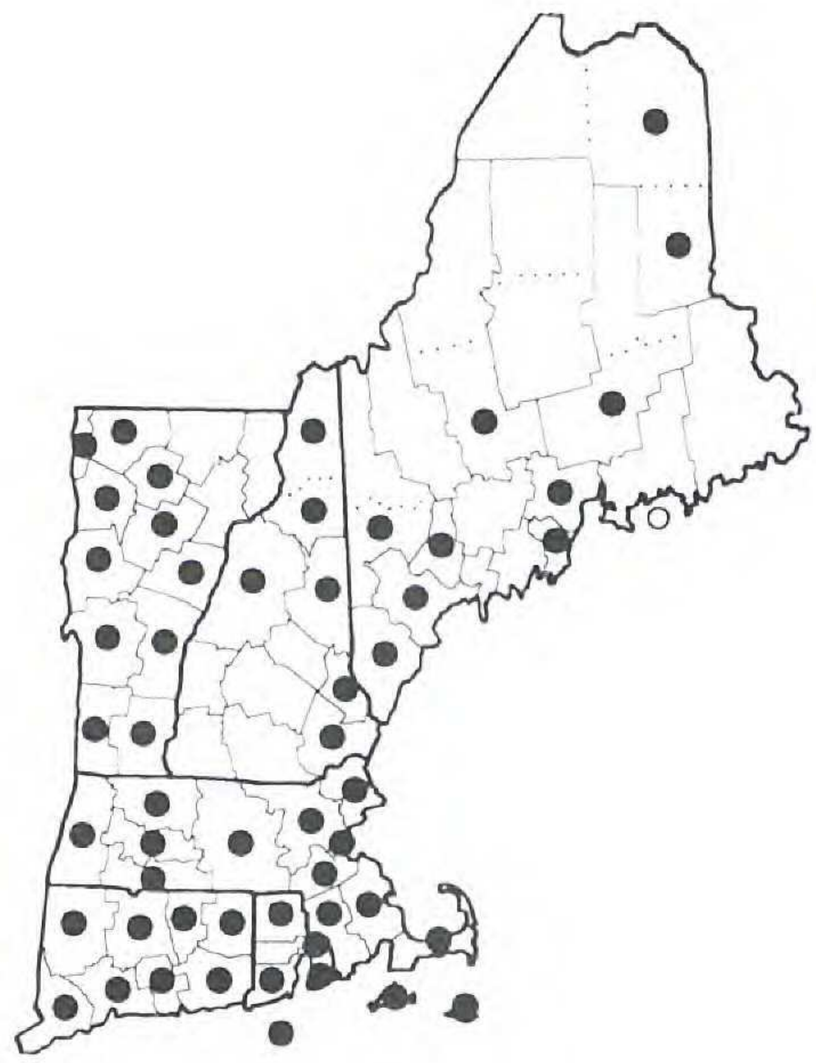
Triglochin gaspense



Triglochin maritima



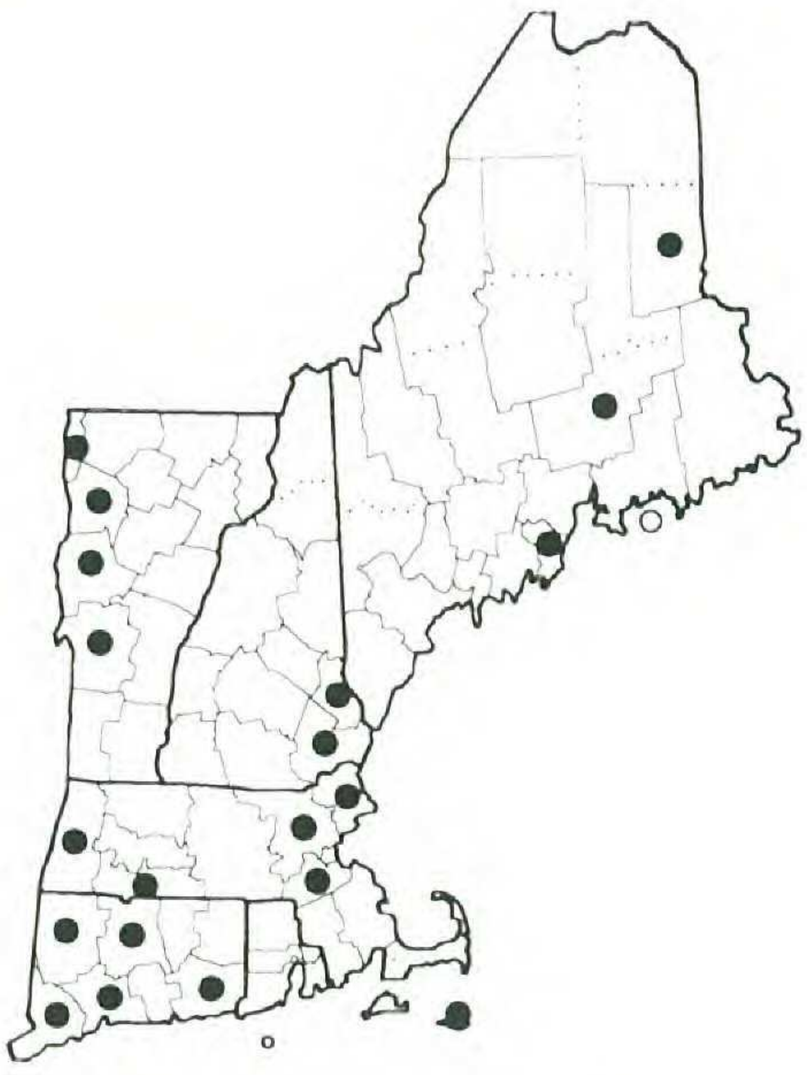
Triglochin palustre



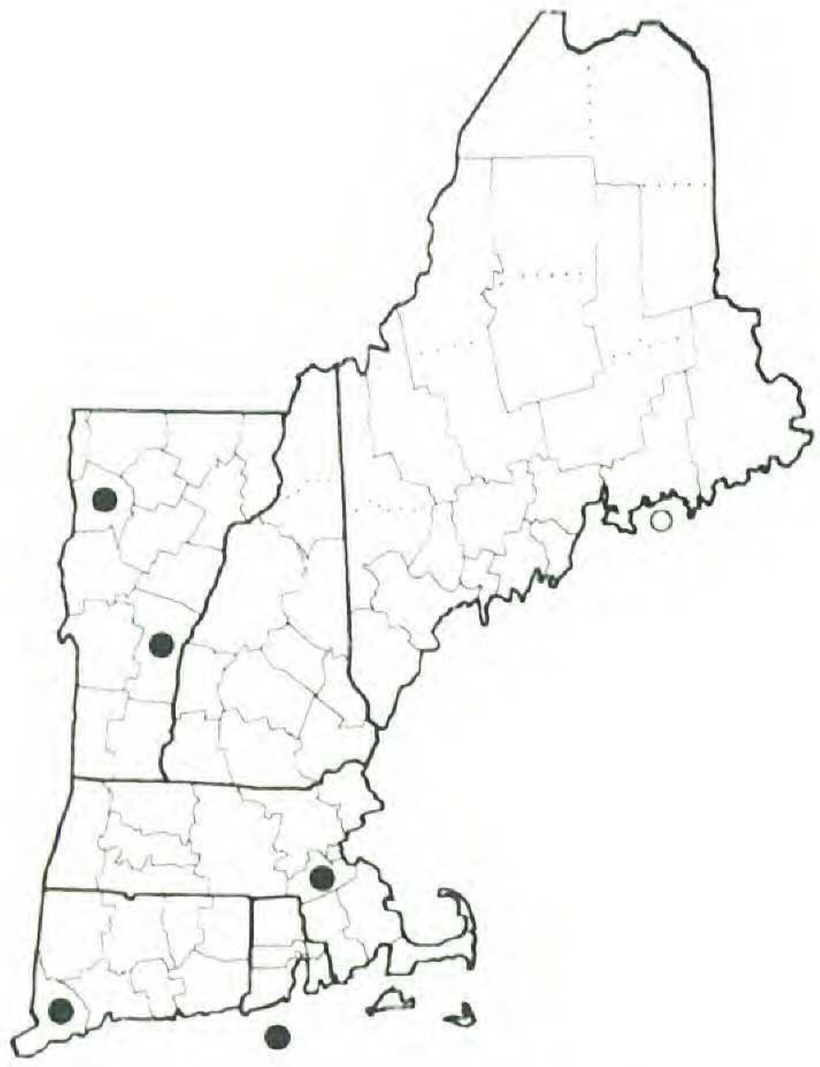
Lemna minor

Figure 29. Distribution maps for *Triglochin gaspense, T. maritima, T. palustre,* and *Lemna minor.*

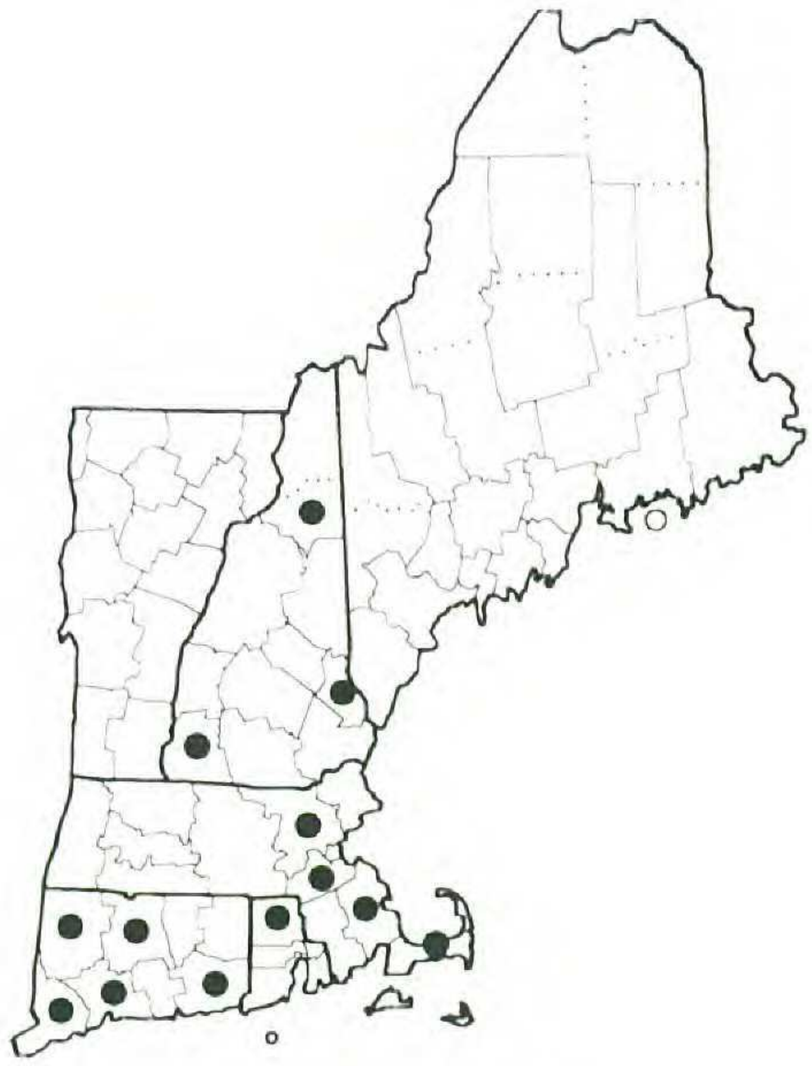
Lemna perpusilla



Lemna trisulca

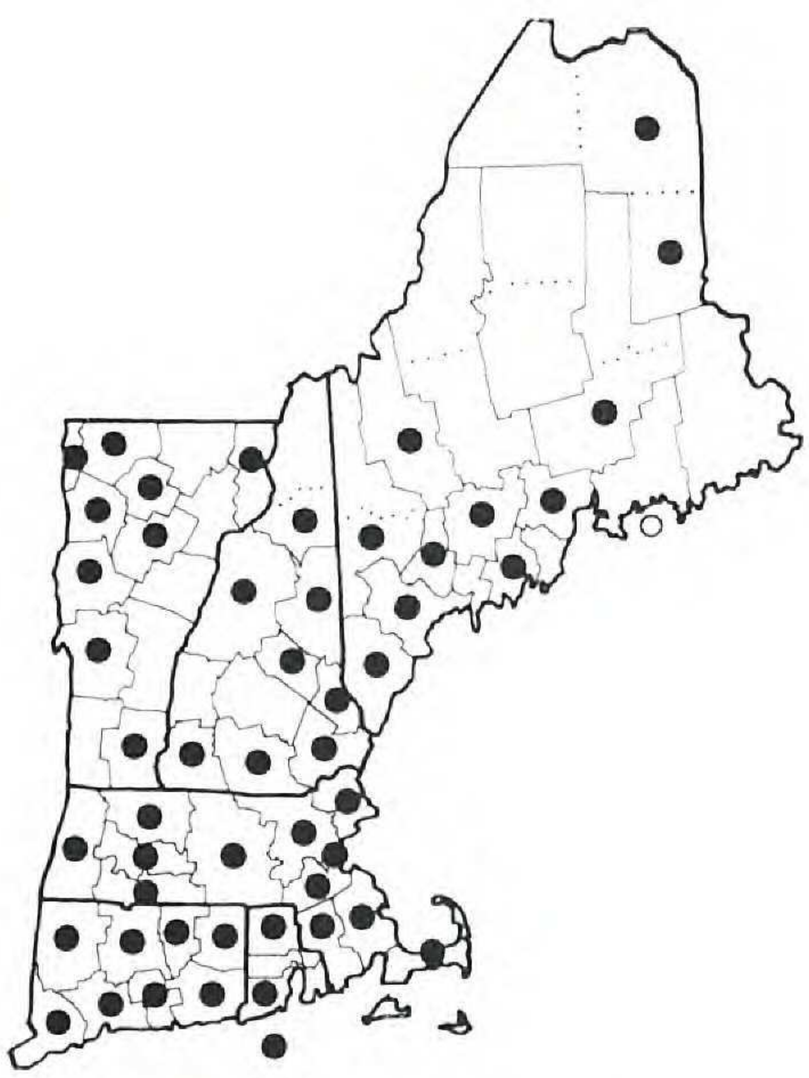


Lemna turionifera



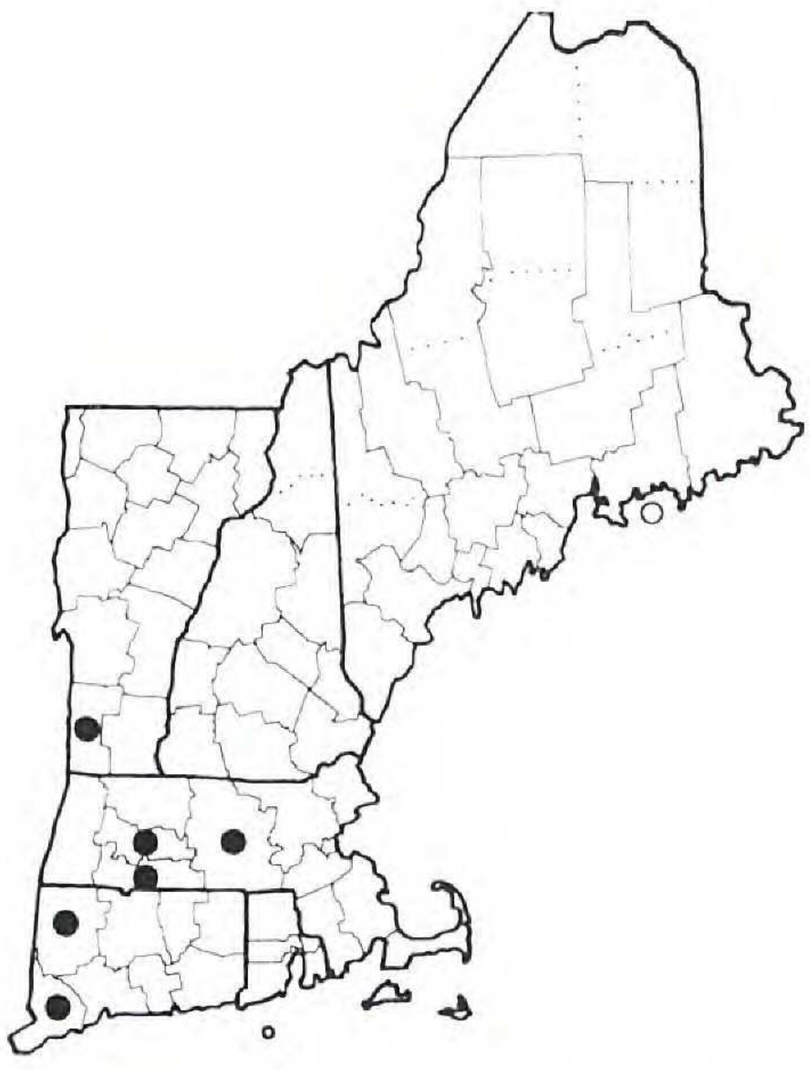
Lemna valdiviana

Figure 30. Distribution maps for *Lemna perpusilla, L. trisulca, L. turionifera,* and *L. valdiviana.*

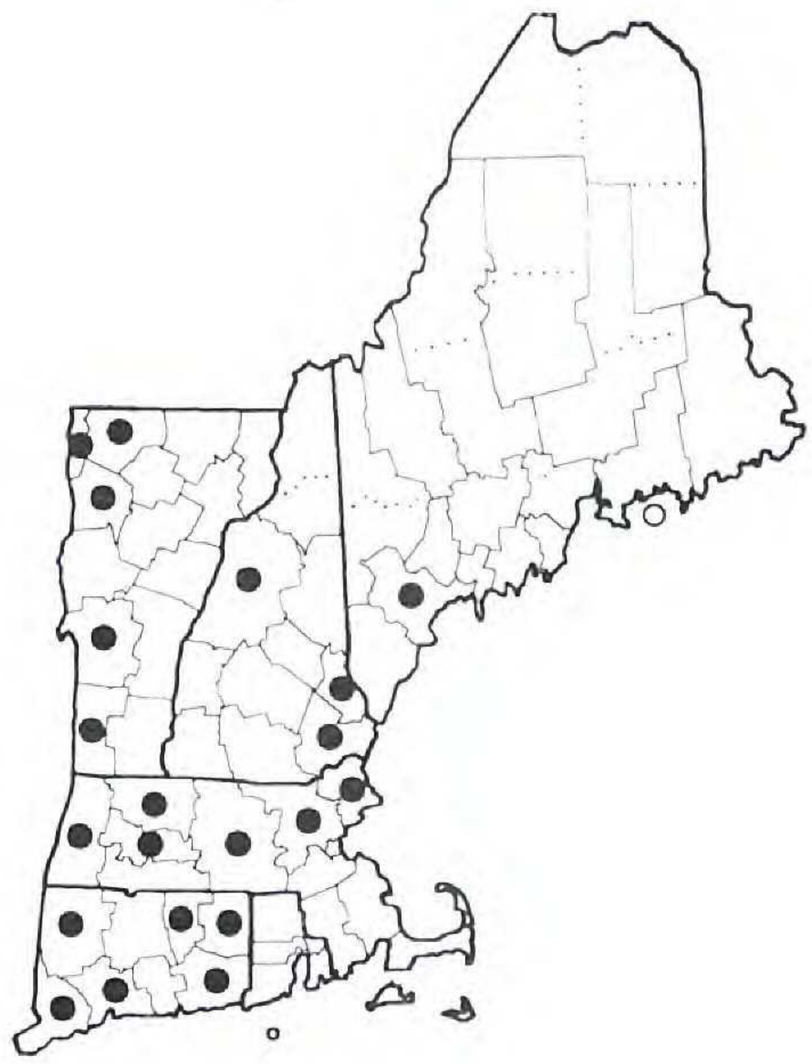


Spirodela polyrrhiza

Wolffia borealis



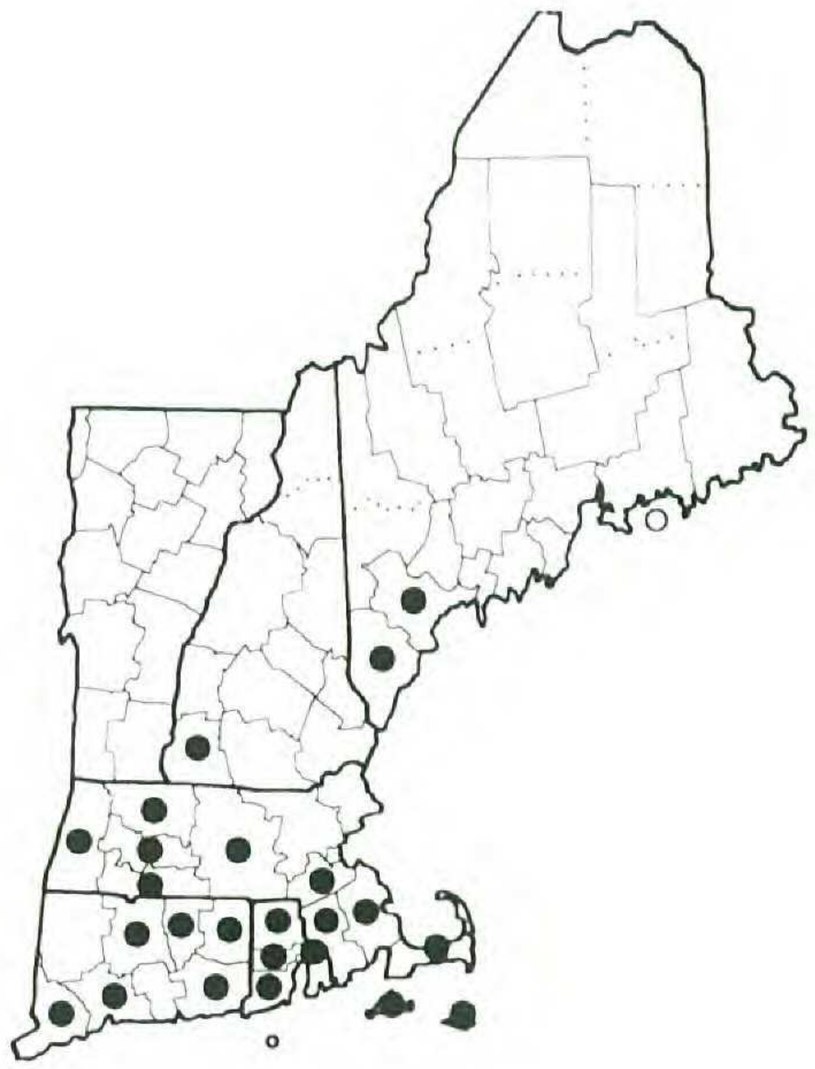
WOLFFIA BRASILIENSIS



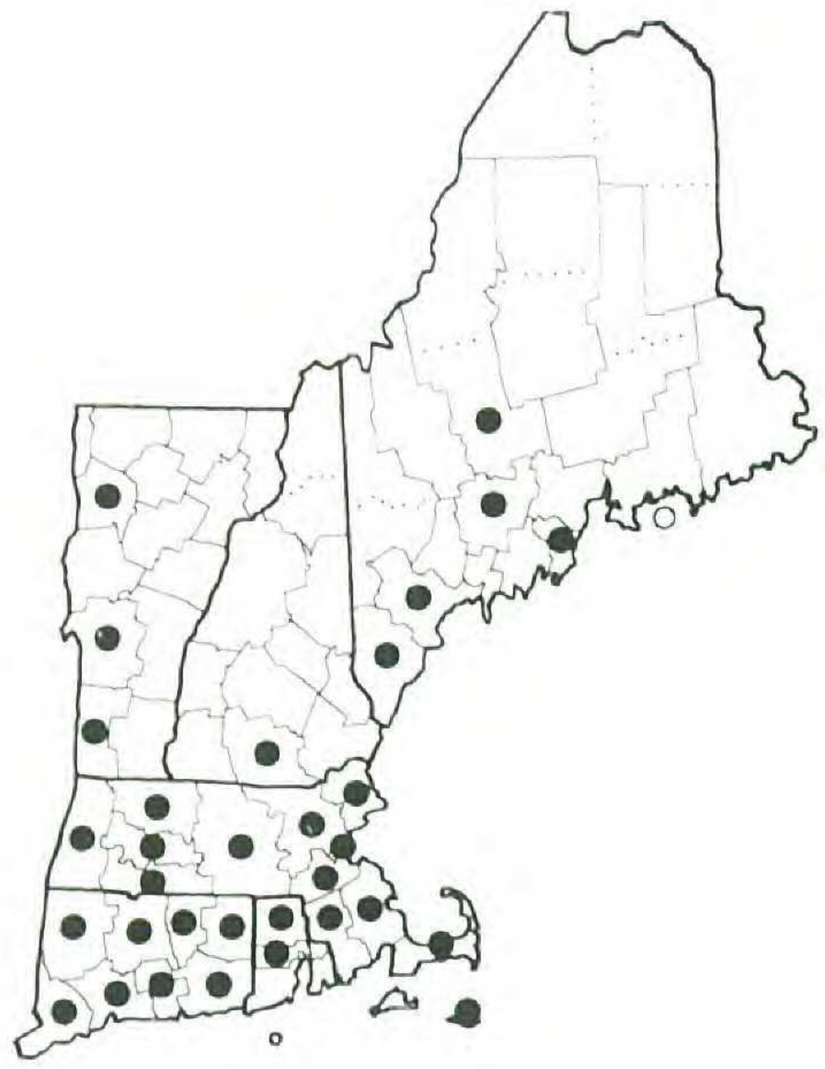
Wolffia columbiana

Figure 31. Distribution maps for *Spirodela polyrrhiza, Wolffia borealis, W. BRASILIENSIS,* and *W. columbiana.*

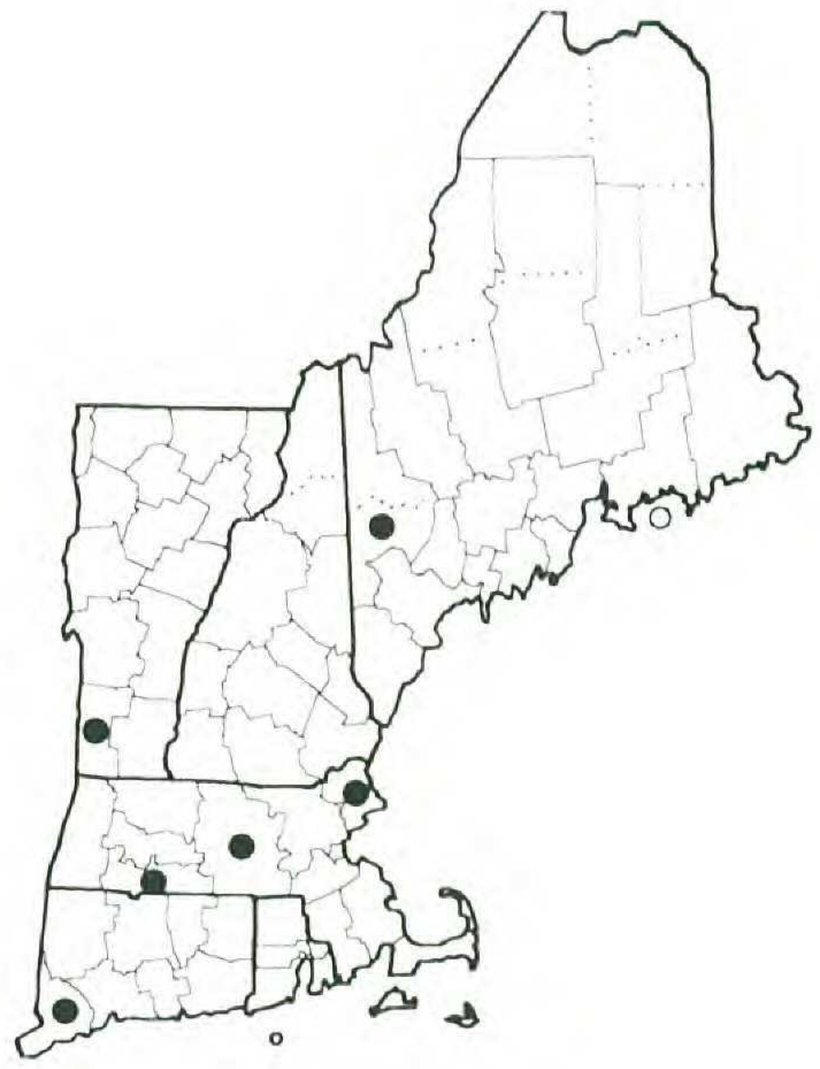
Wolffiella gladiata



Aletris farinosa



Allium canadense
var. *canadense*

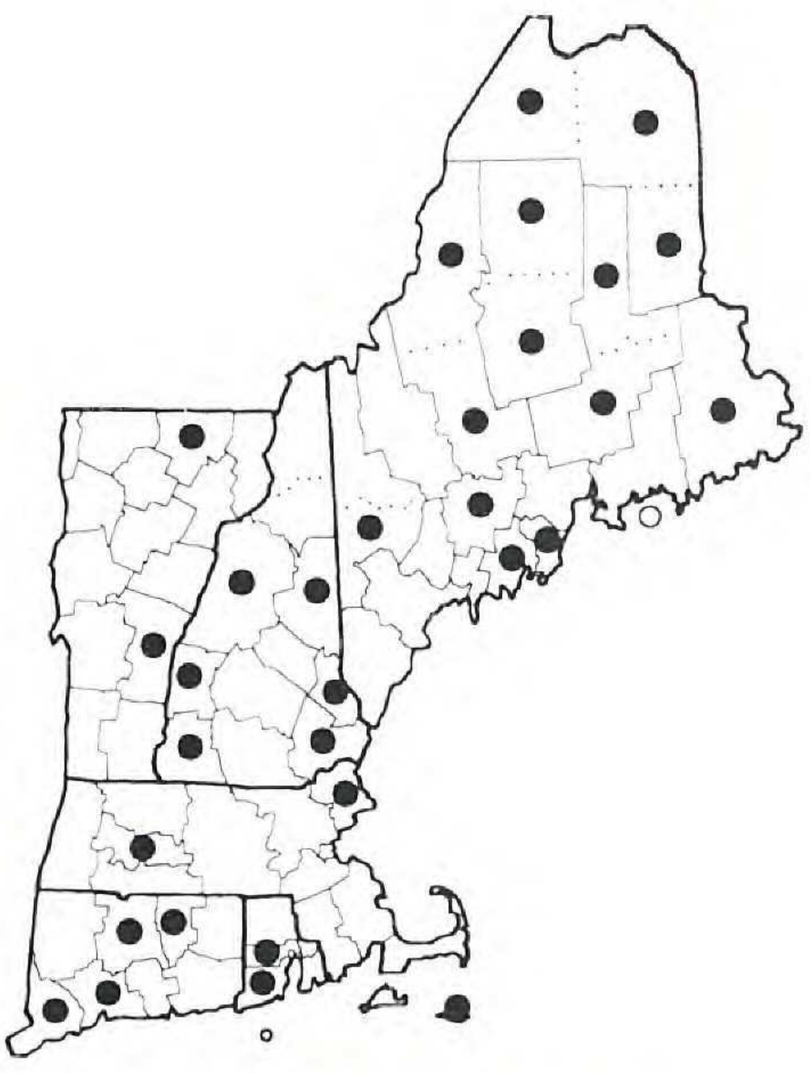


ALLIUM CEPA

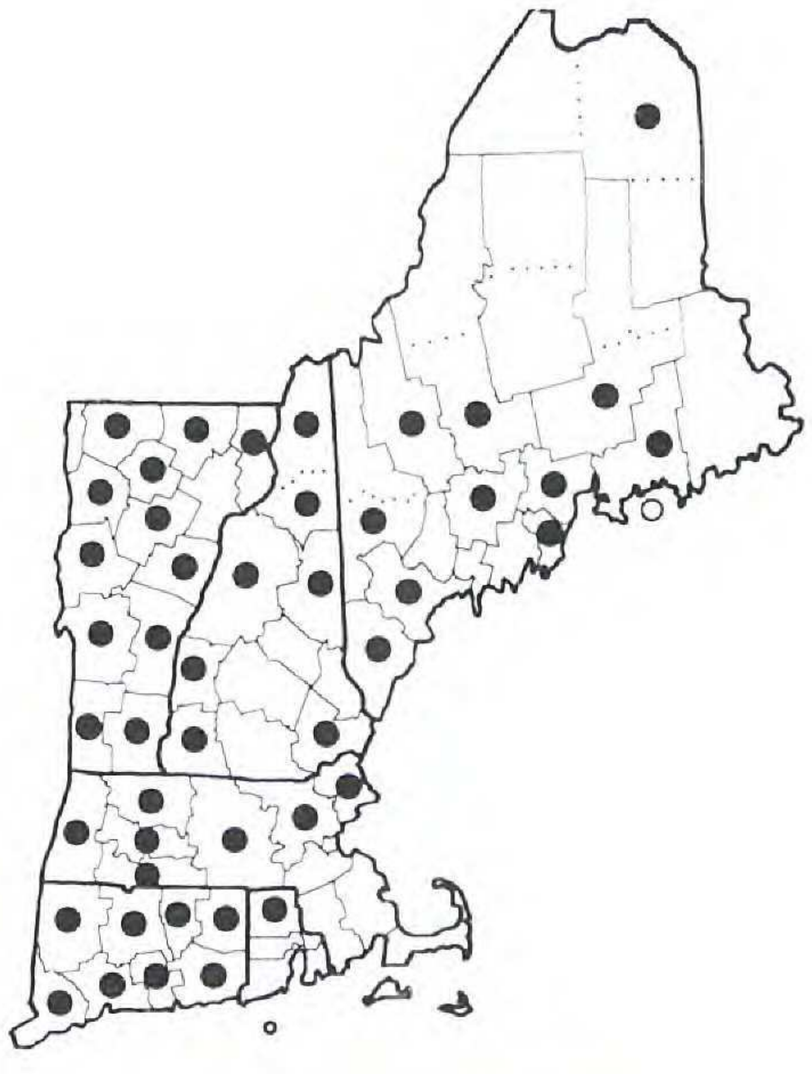
Figure 32. Distribution maps for *Wolffiella gladiata*, *Aletris farinosa*, *Allium canadense* var. *canadense*, and *A. CEPA*.

ALLIUM OLERACEUM

ALLIUM SATIVUM



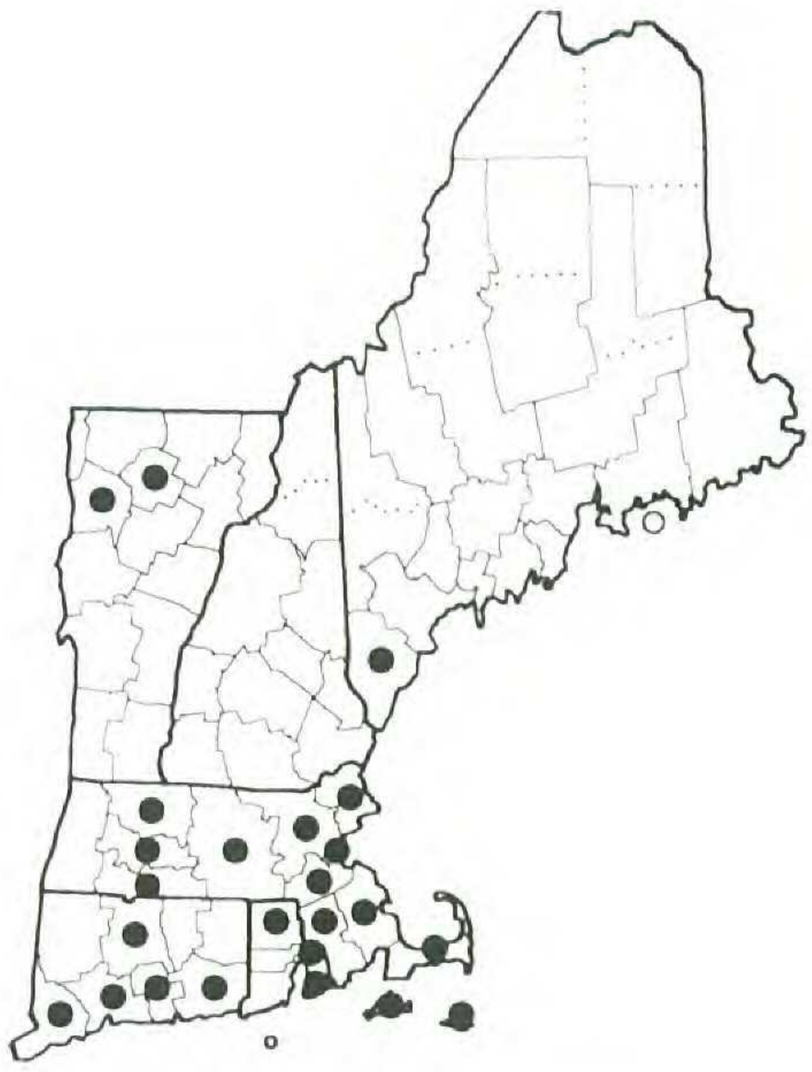
Allium schoenoprasum



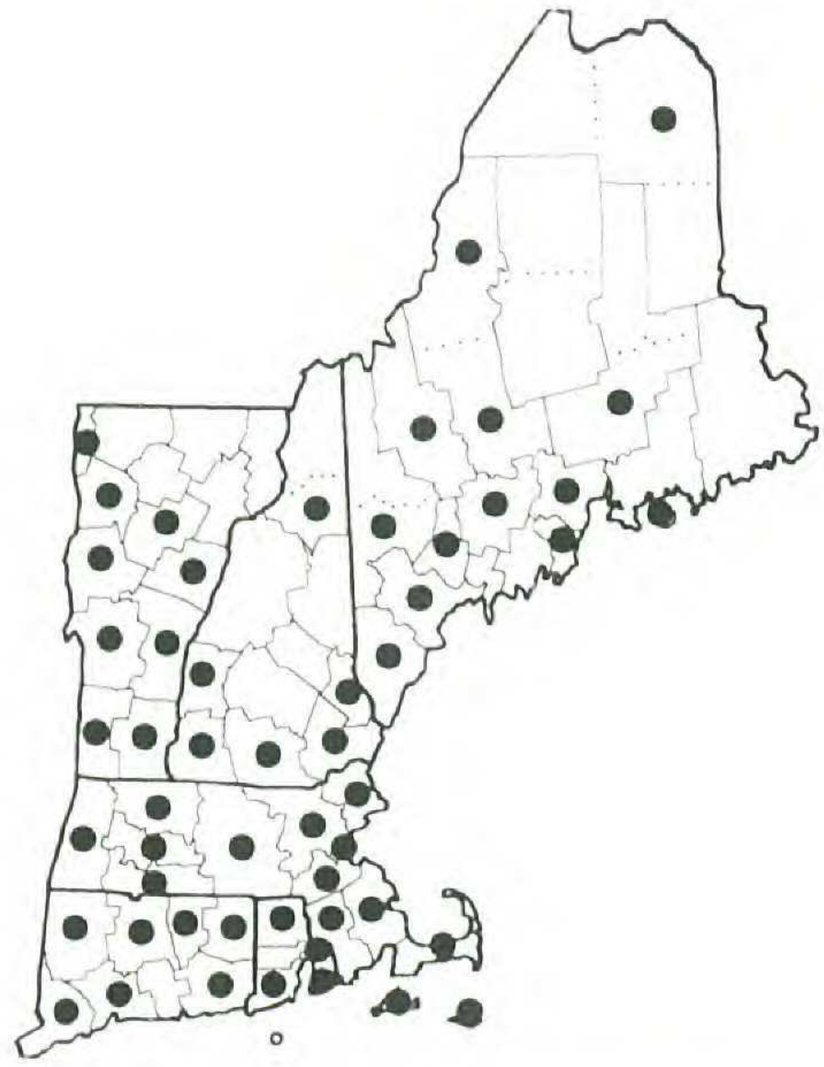
Allium tricoccum
var. *tricoccum*

Figure 33. Distribution maps for *ALLIUM OLERACEUM, A. SATIVUM, A. schoenoprasum,* and *A. tricoccum* var. *tricoccum.*

Allium tricoccum
var. *burdickii*



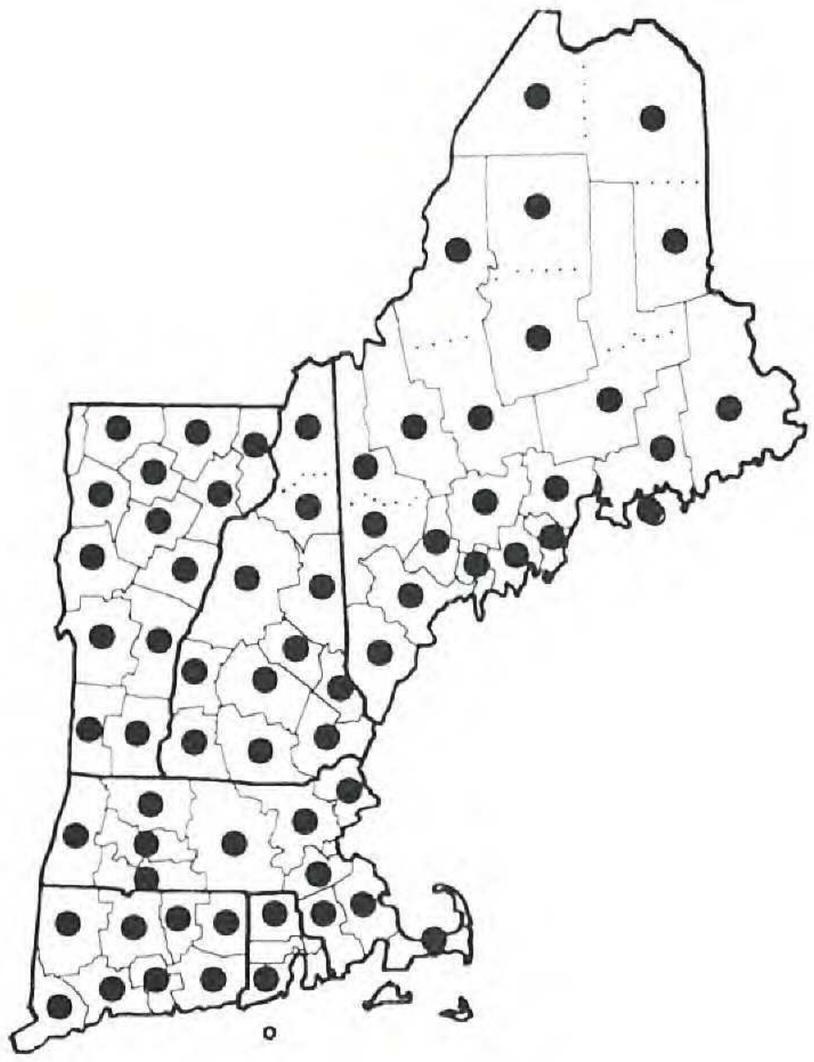
ALLIUM VINEALE



ASPARAGUS OFFICINALIS

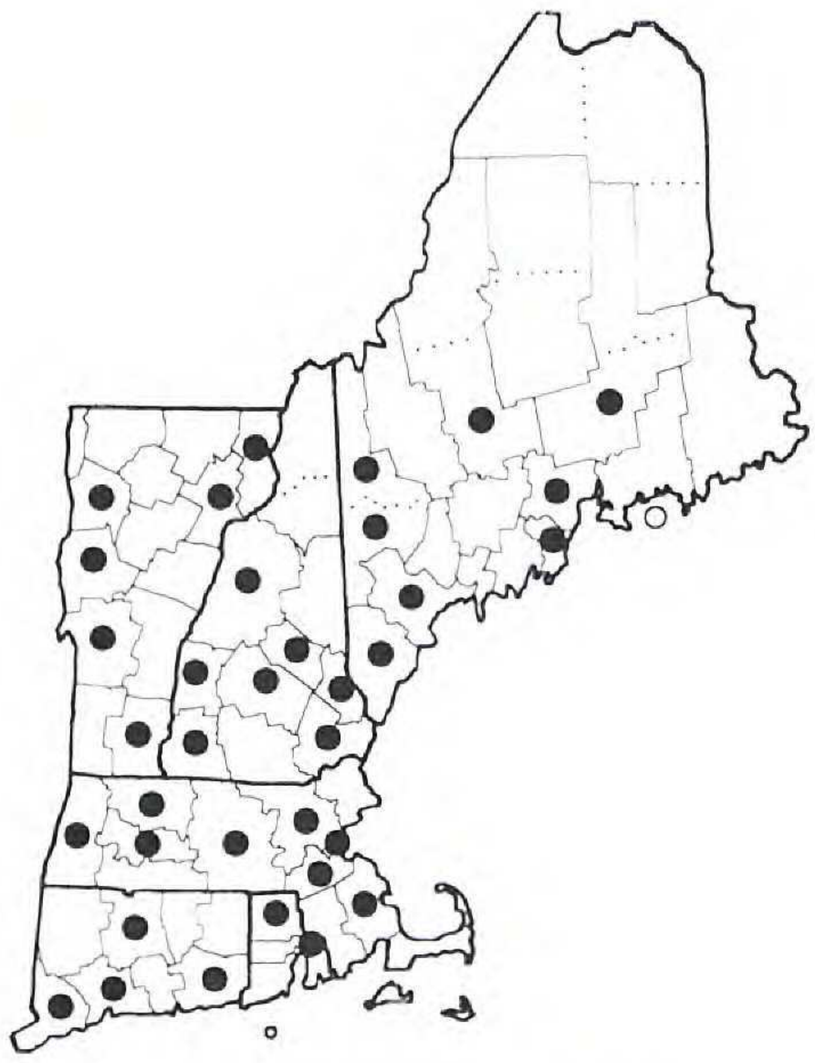
Chamaelirium luteum

Figure 34. Distribution maps for *Allium tricoccum* var. *burdickii*, *A. VINEALE*, *ASPARAGUS OFFICINALIS*, and *Chamaelirium luteum*.

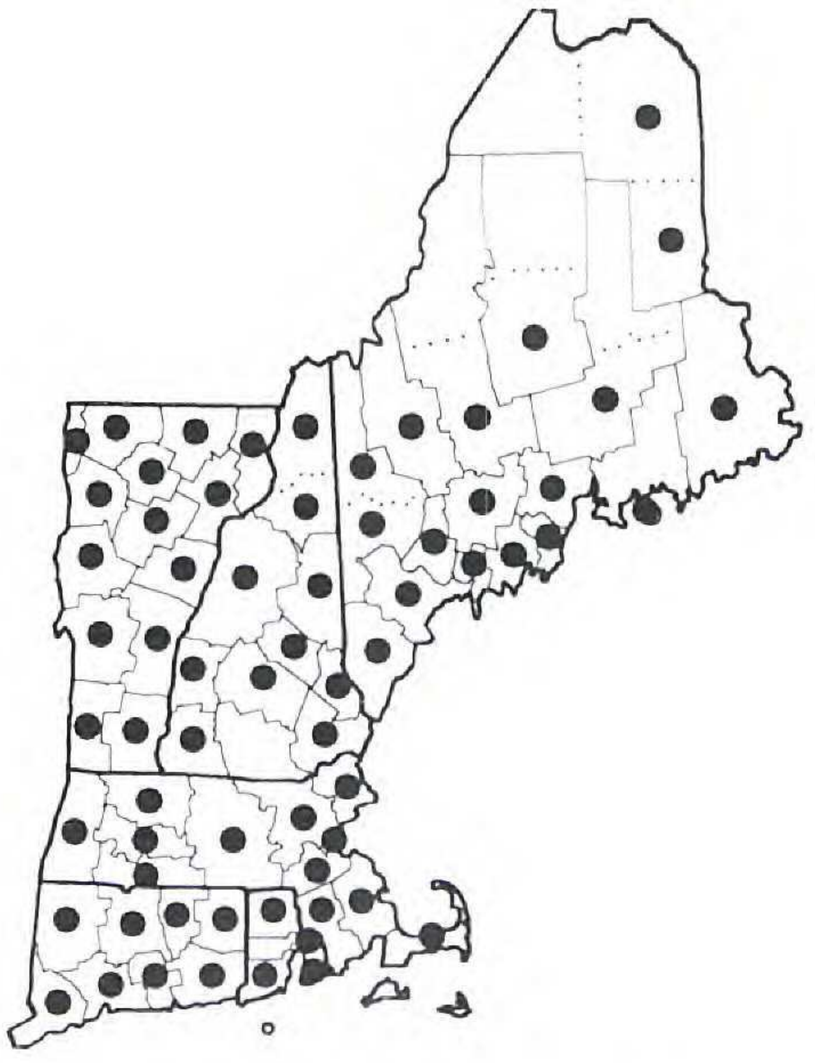


Clintonia borealis

COLCHICUM AUTUMNALE



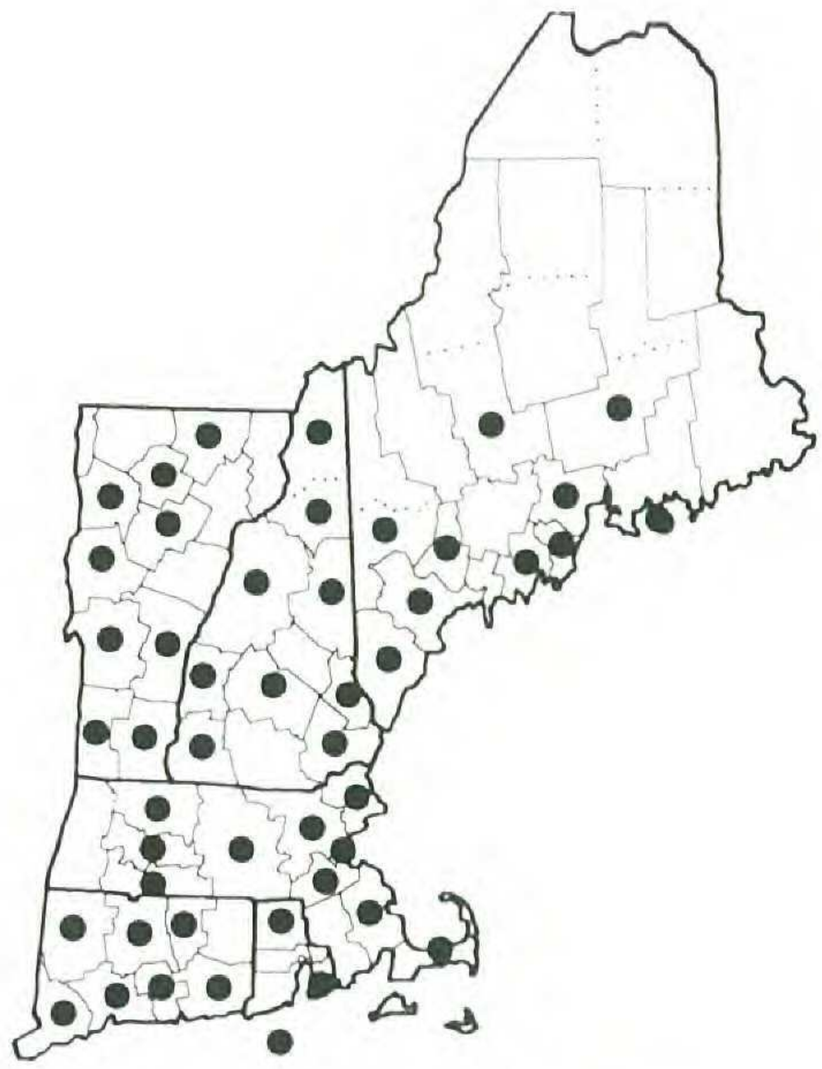
CONVALLARIA MAJALIS
var. *MAJALIS*



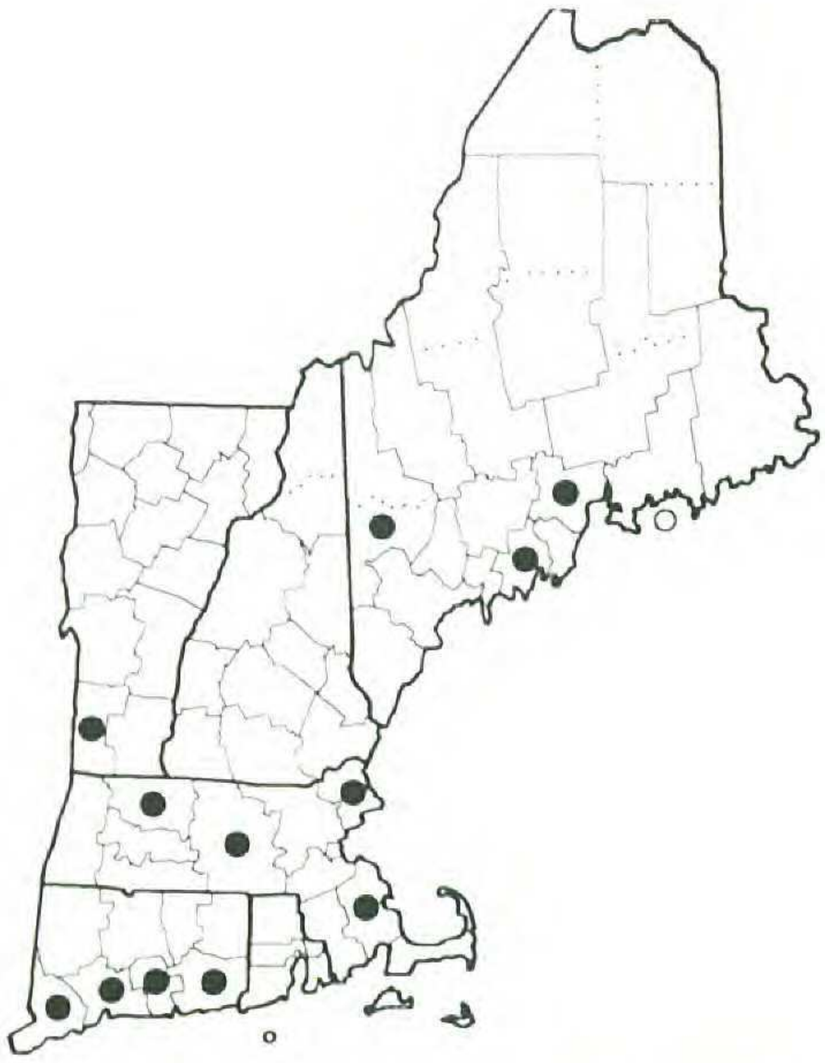
Erythronium americanum

Figure 35. Distribution maps for *Clintonia borealis, COLCHICUM AUTUMNALE, CONVALLARIA MAJALIS* var. *MAJALIS,* and *Erythronium americanum.*

GALANTHUS NIVALIS
subsp. *NIVALIS*



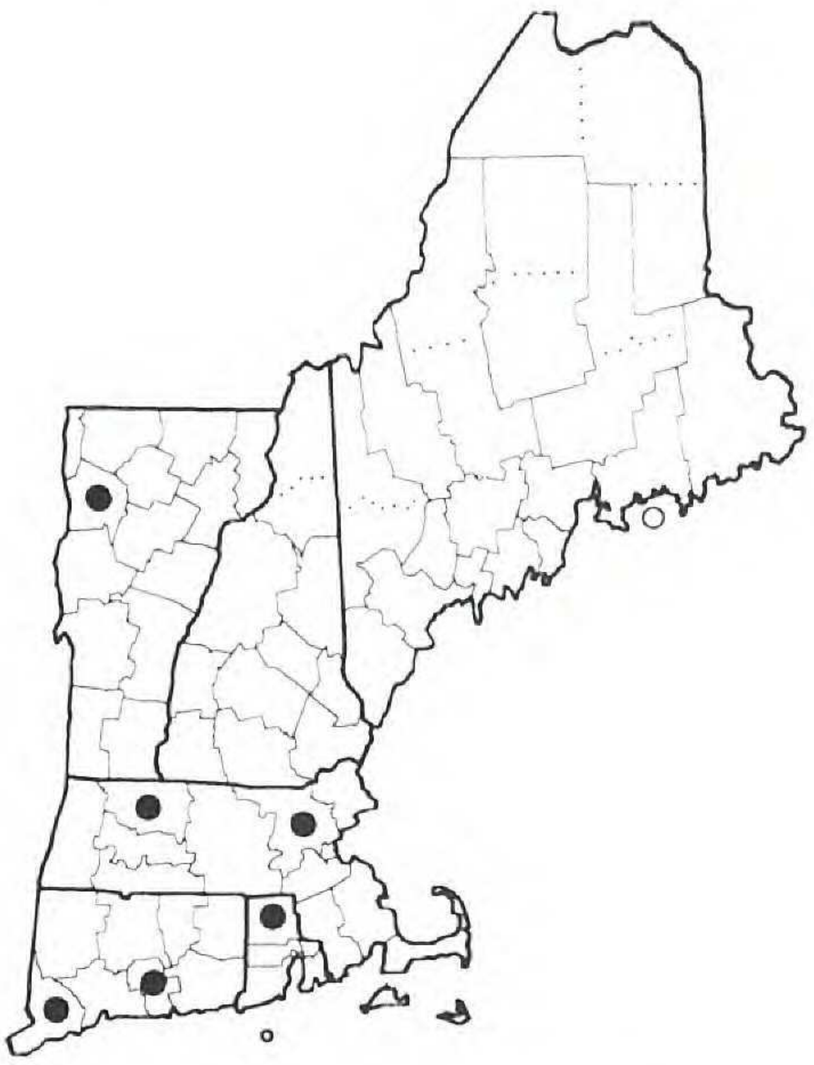
HEMEROCALLIS FULVA



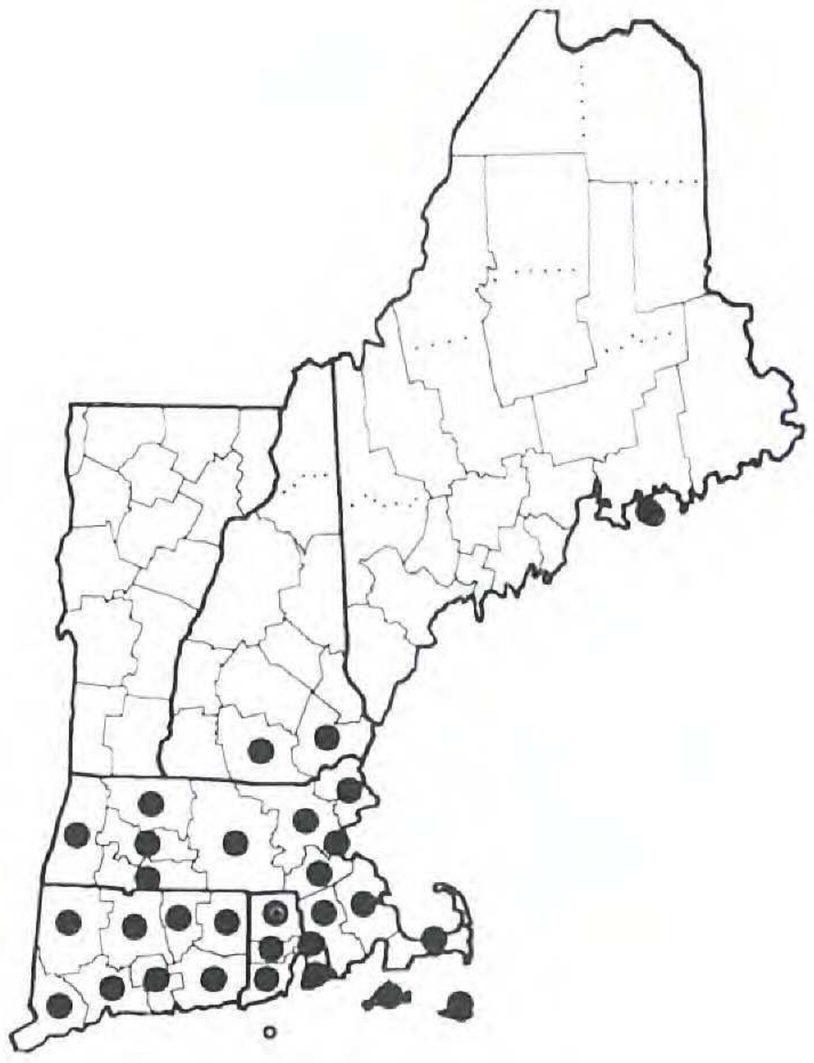
HEMEROCALLIS LILIOASPHODELUS

HOSTA LANCIFOLIA

Figure 36. Distribution maps for *GALANTHUS NIVALIS* subsp. *NIVALIS*, *HEMEROCALLIS FULVA*, *H. LILIOASPHODELUS*, and *HOSTA LANCIFOLIA*.

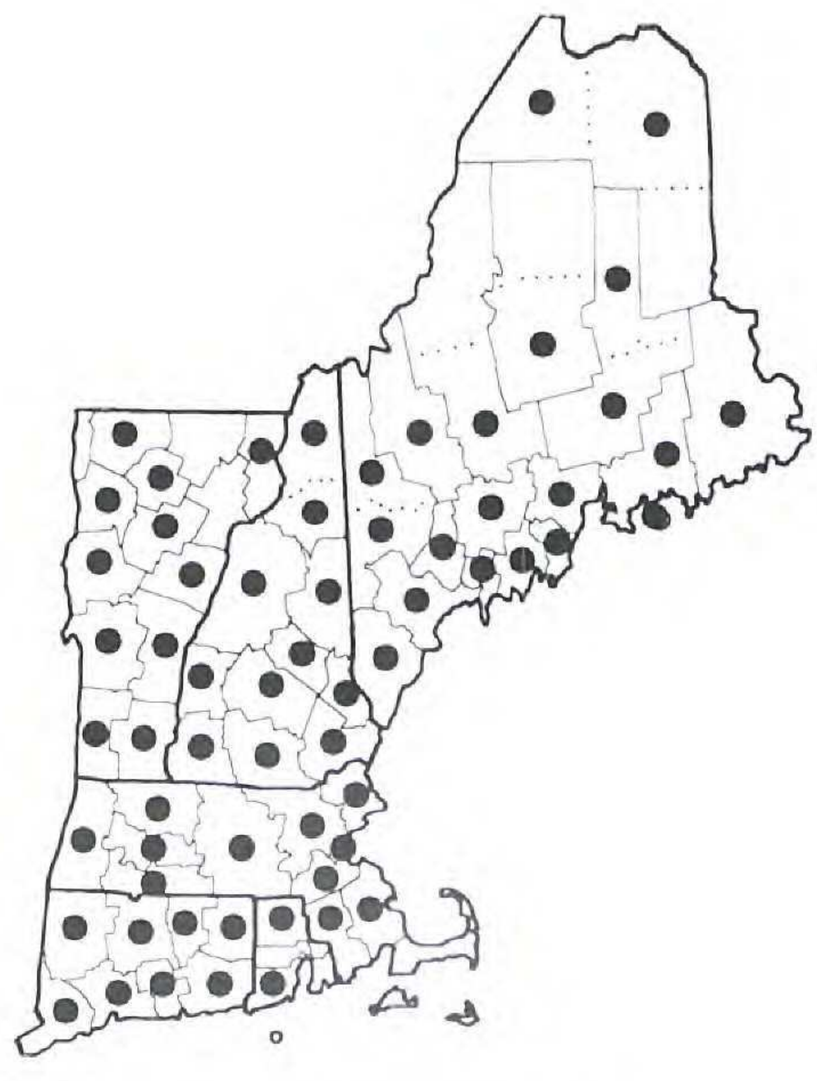


HOSTA VENTRICOSA



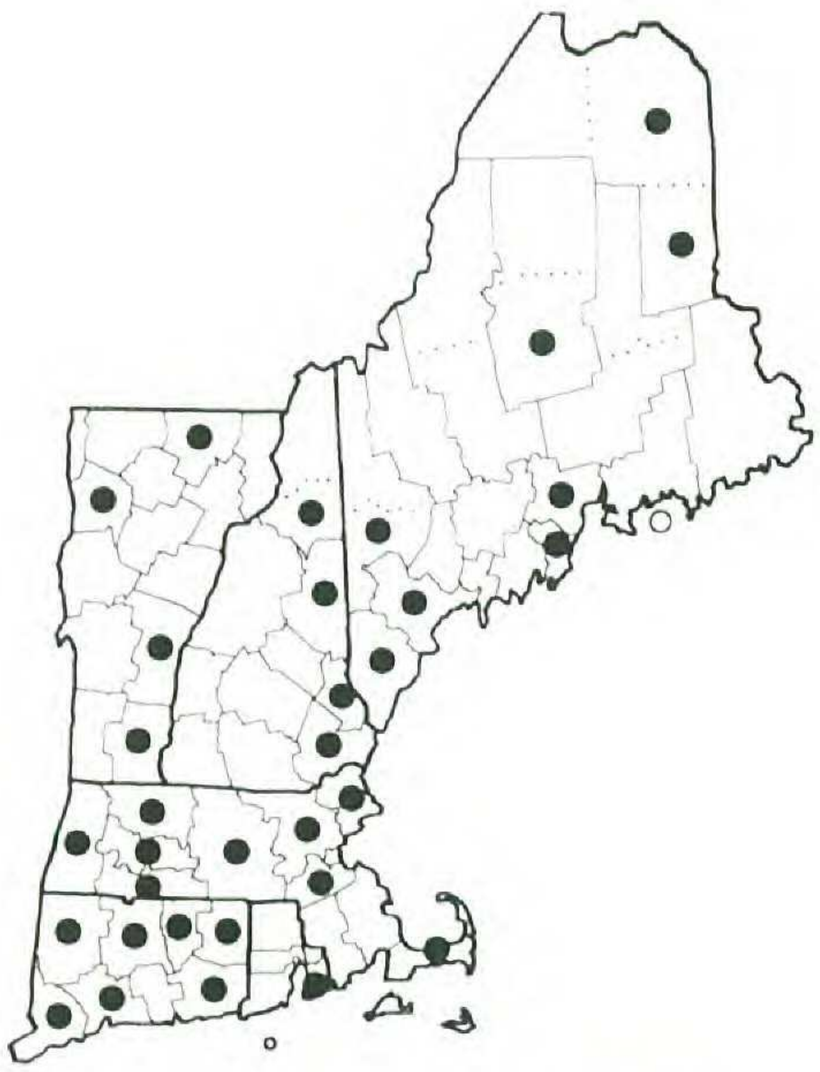
Hypoxis hirsuta

LEUCOJUM AESTIVUM

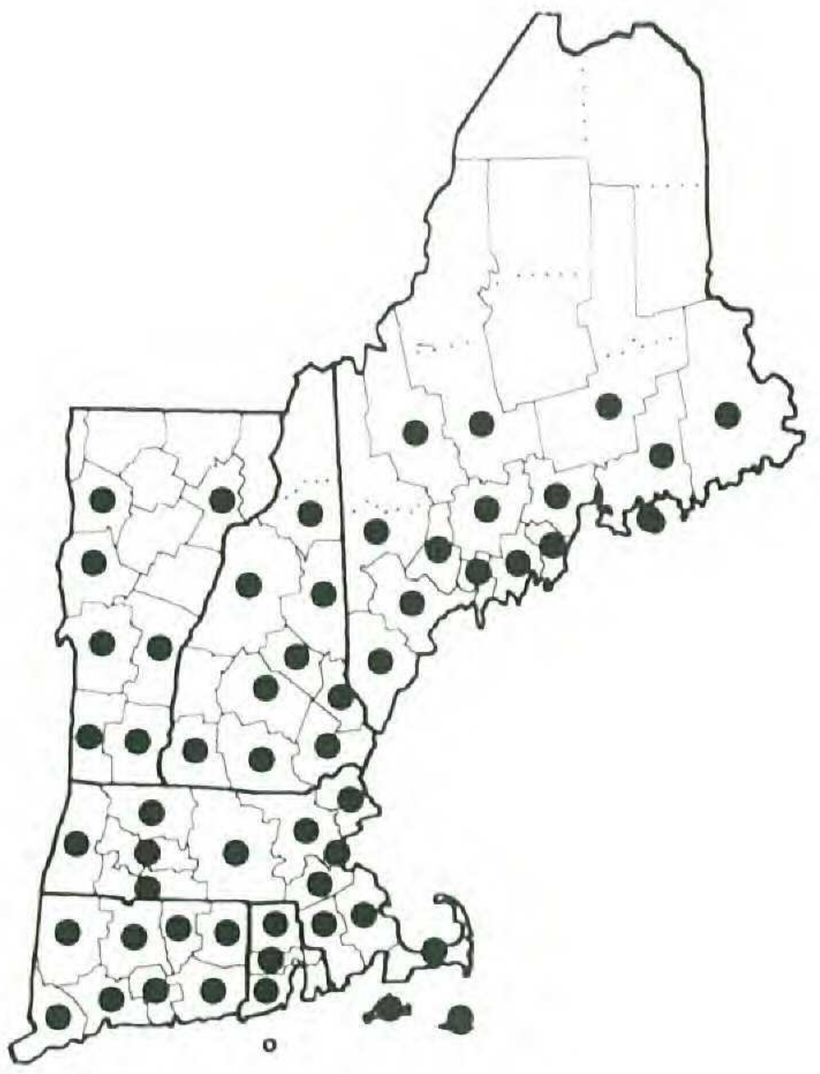


Lilium canadense

Figure 37. Distribution maps for *HOSTA VENTRICOSA*, *Hypoxis hirsuta*, *LEUCOJUM AESTIVUM*, and *Lilium canadense*.

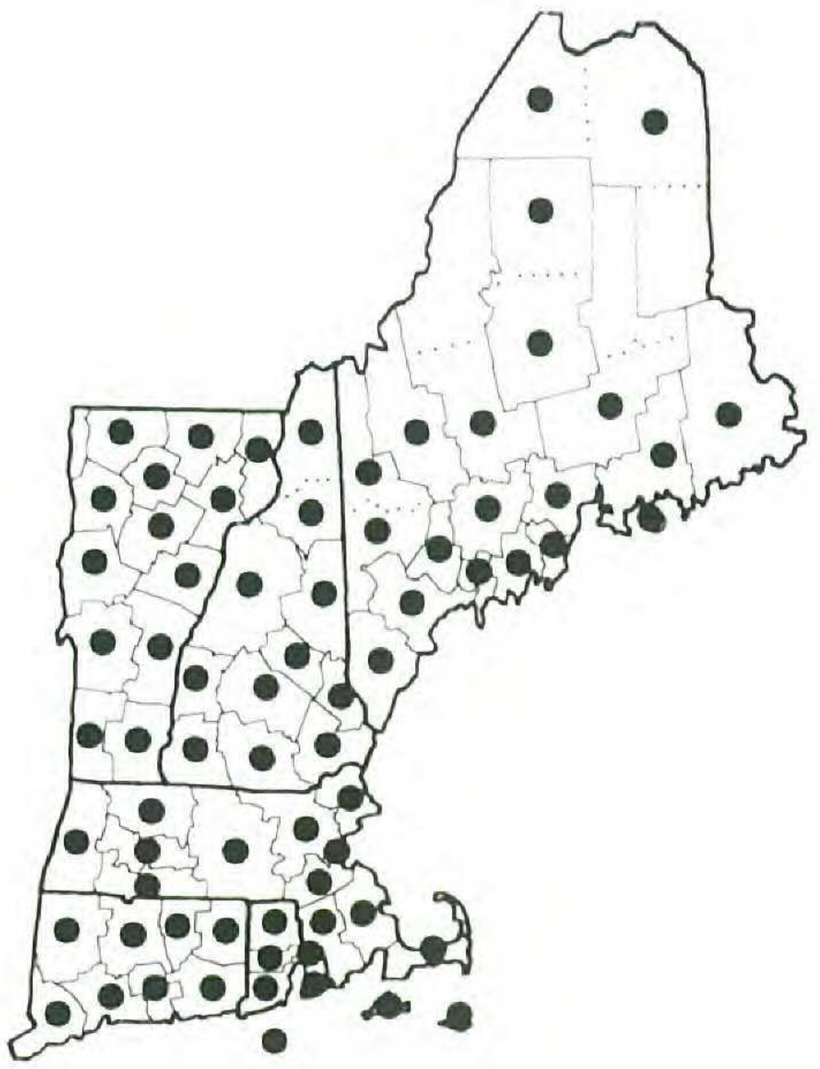


LILIUM LANCIFOLIUM



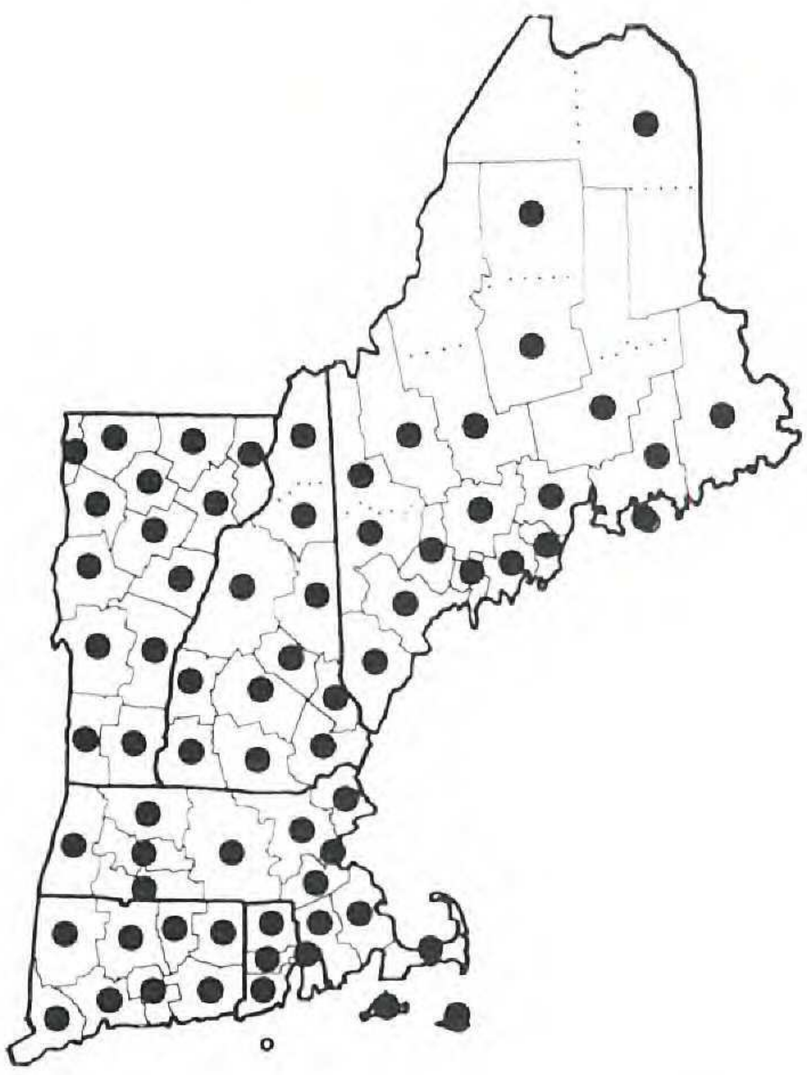
Lilium philadelphicum

Lilium superbum

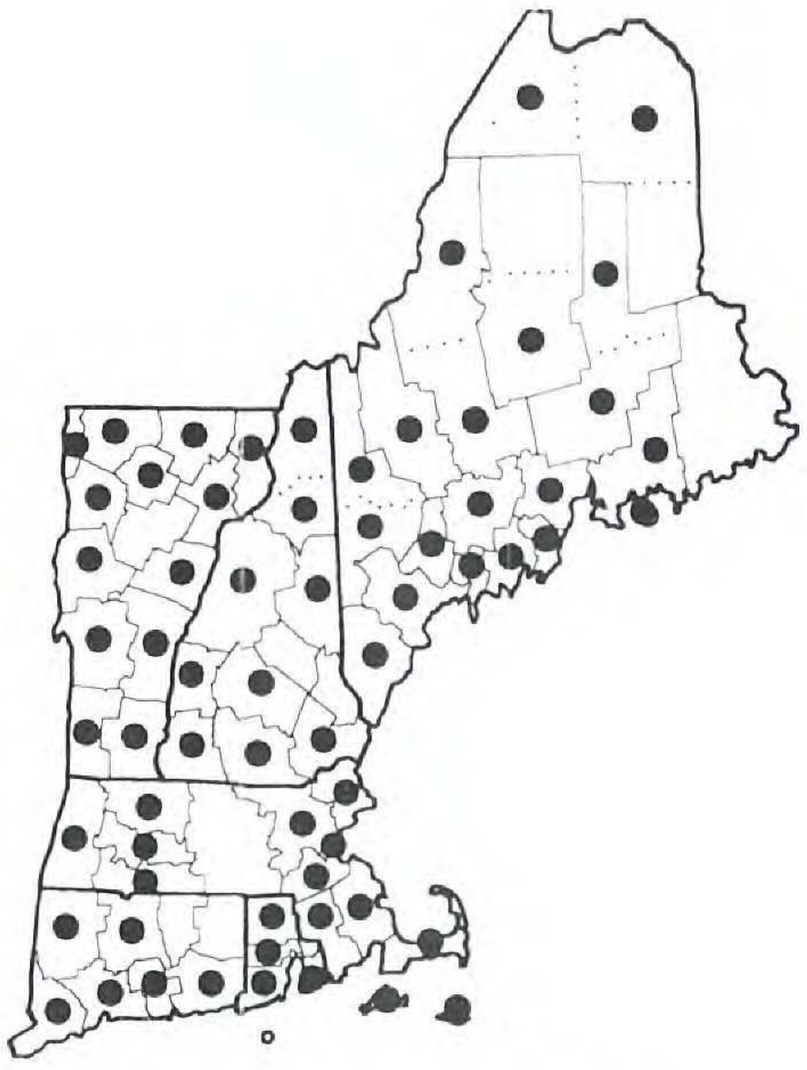


Maianthemum canadense

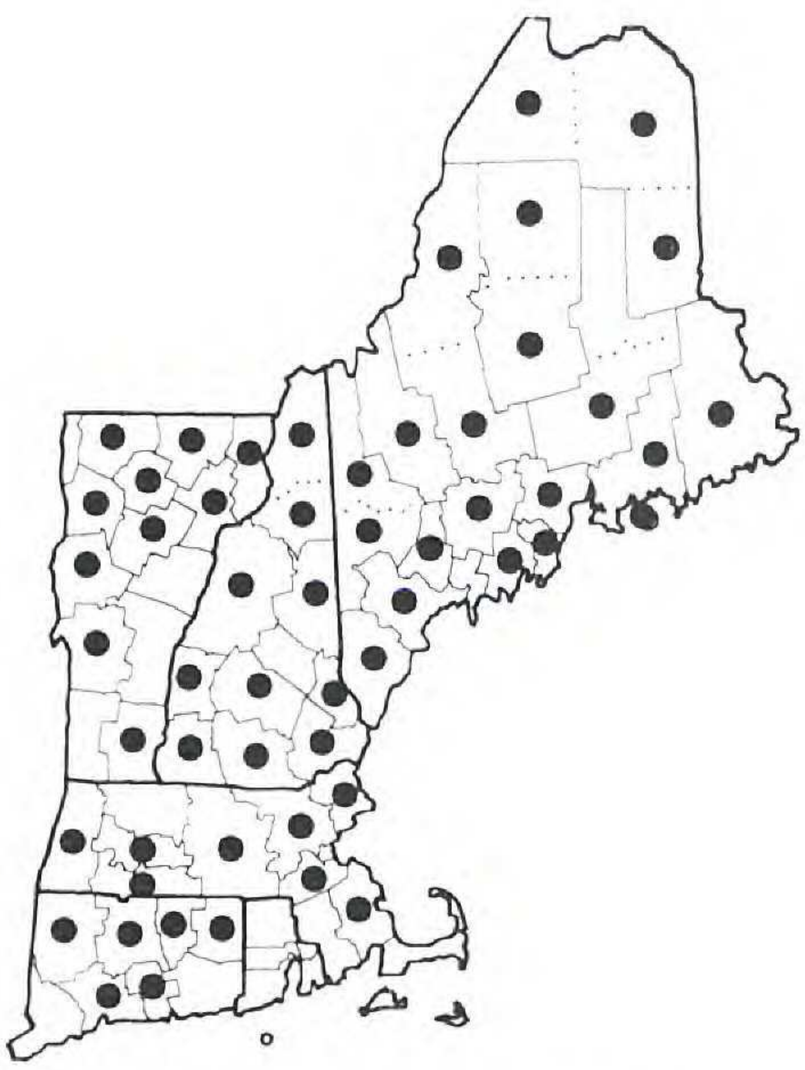
Figure 38. Distribution maps for *LILIUM LANCIFOLIUM*, *L. philadelphicum*, *L. superbum*, and *Maianthemum canadense*.



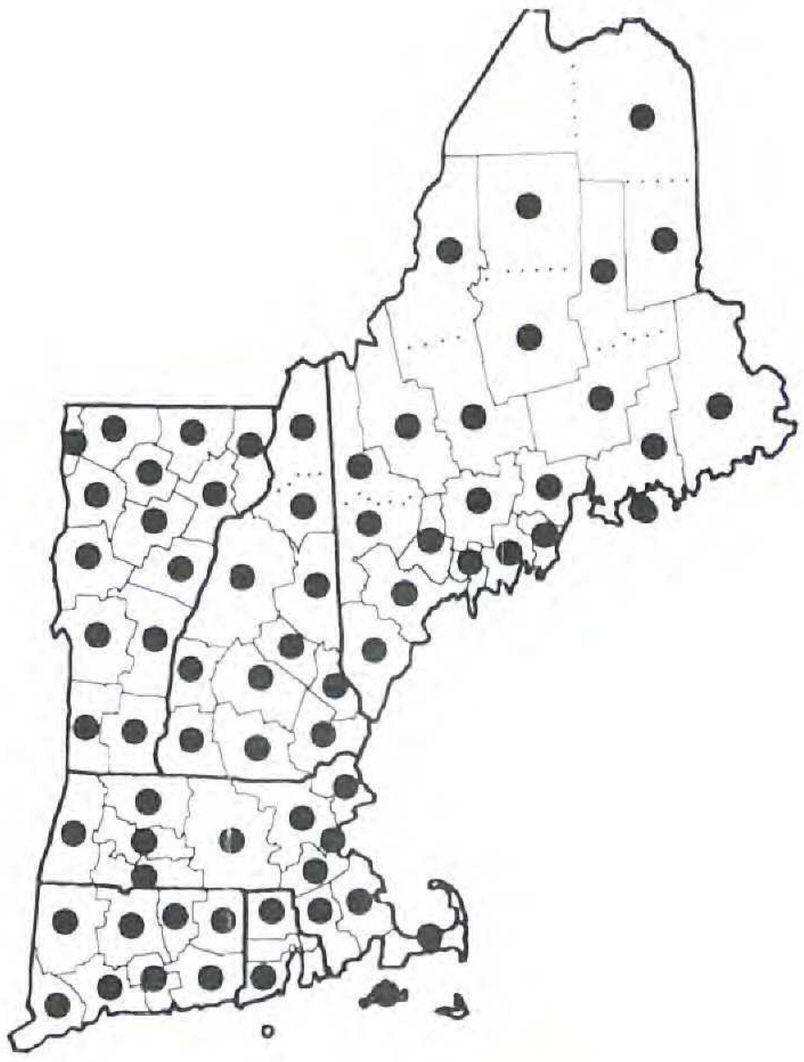
Maianthemum racemosum subsp. *racemosum*



Maianthemum stellatum

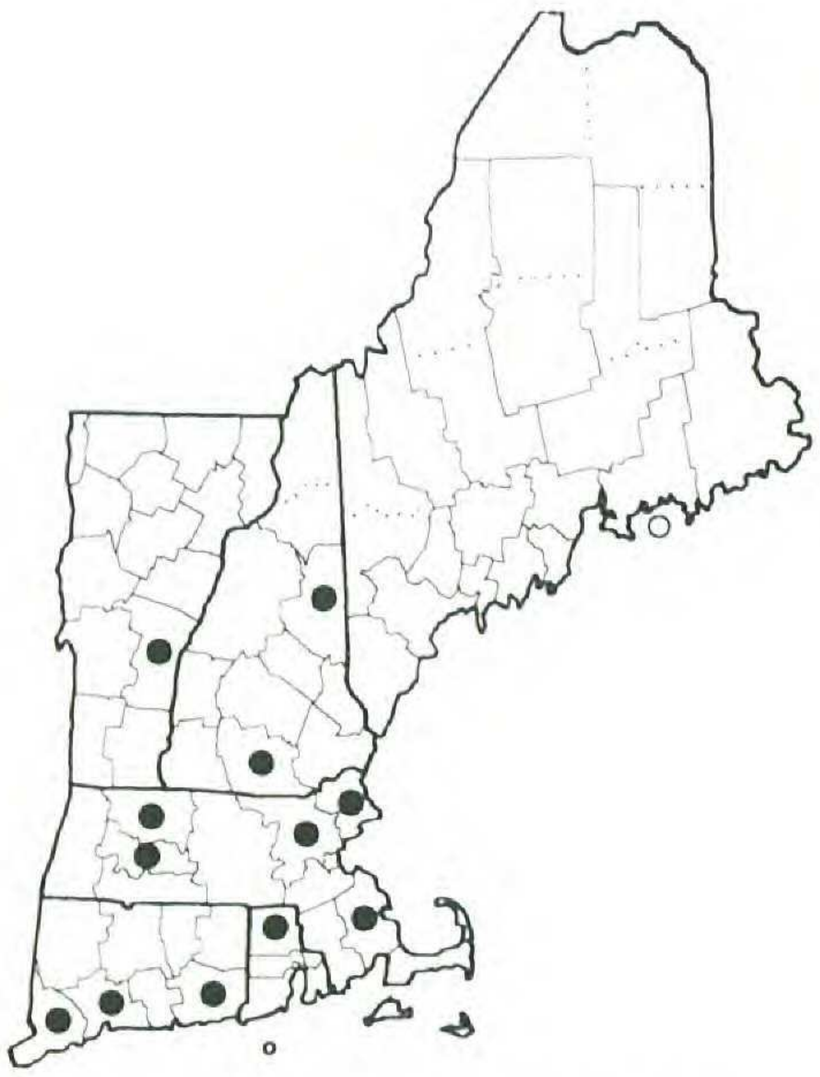


Maianthemum trifolium



Medeola virginiana

Figure 39. Distribution maps for *Maianthemum racemosum* subsp. *racemosum*, *M. stellatum*, *M. trifolium*, and *Medeola virginiana*.



MUSCARI BOTRYOIDES

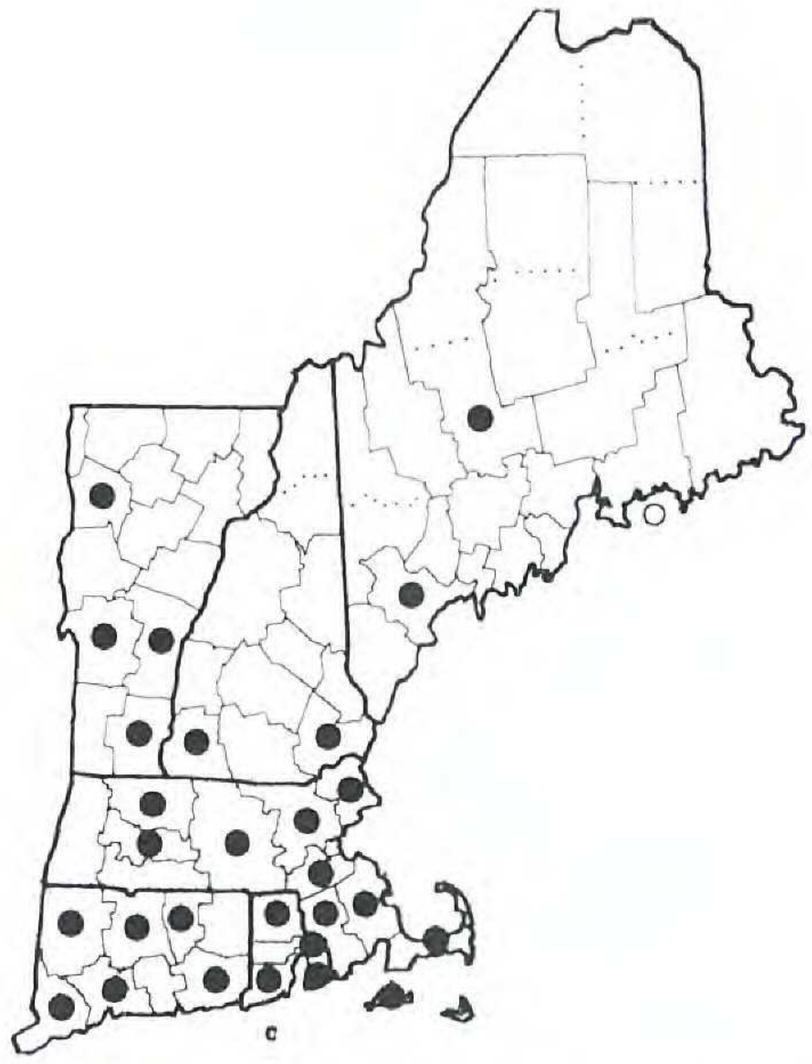
MUSCARI NEGLECTUM

NARCISSUS POETICUS

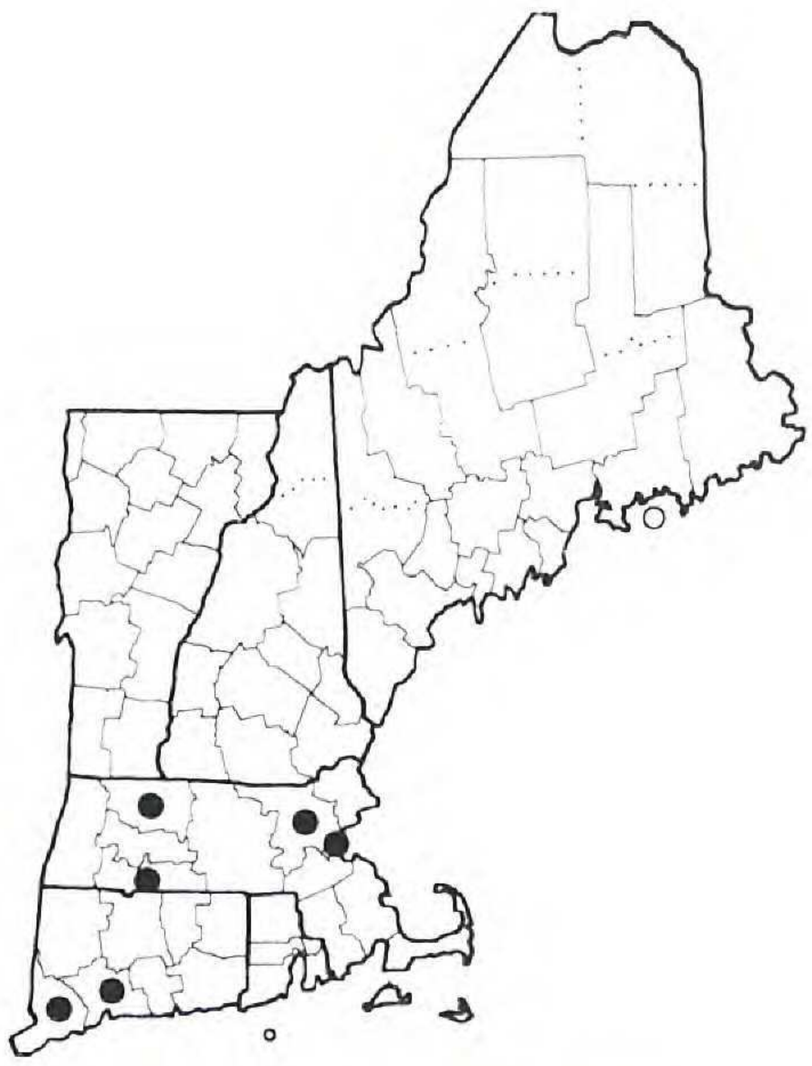
NARCISSUS PSEUDONARCISSUS

Figure 40. Distribution maps for *MUSCARI BOTRYOIDES*, *M. NEGLECTUM*, *NARCISSUS POETICUS*, and *N. PSEUDONARCISSUS*.

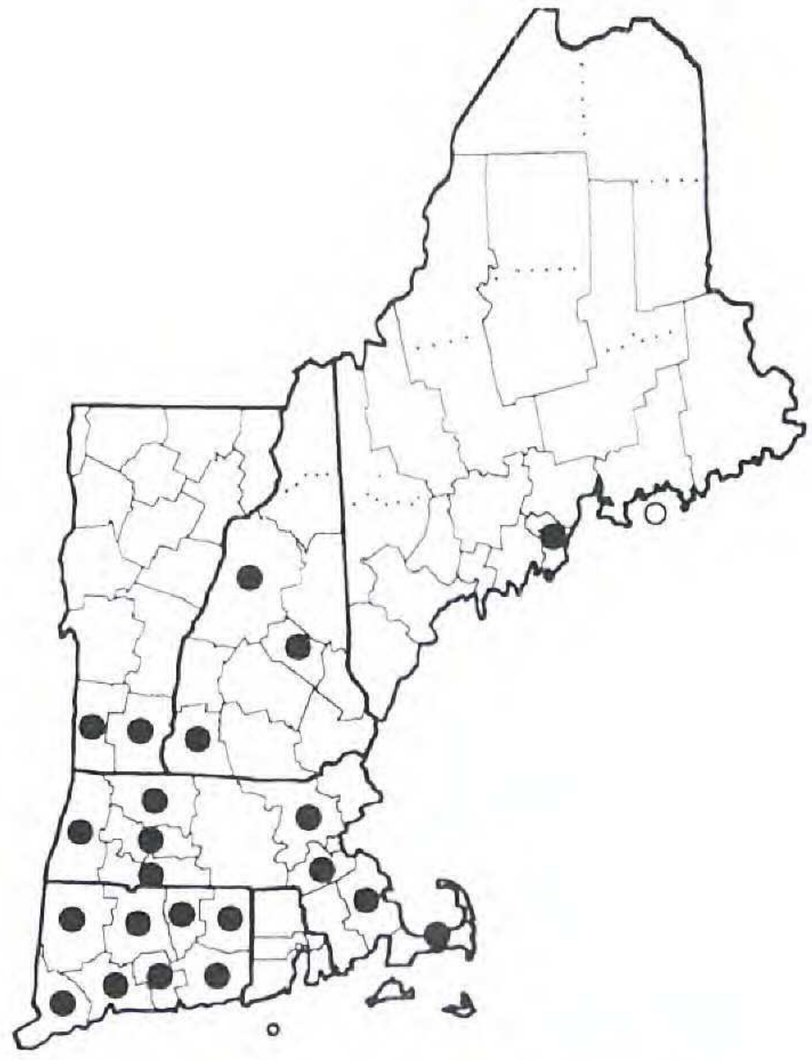
ORNITHOGALUM NUTANS



ORNITHOGALUM UMBELLATUM



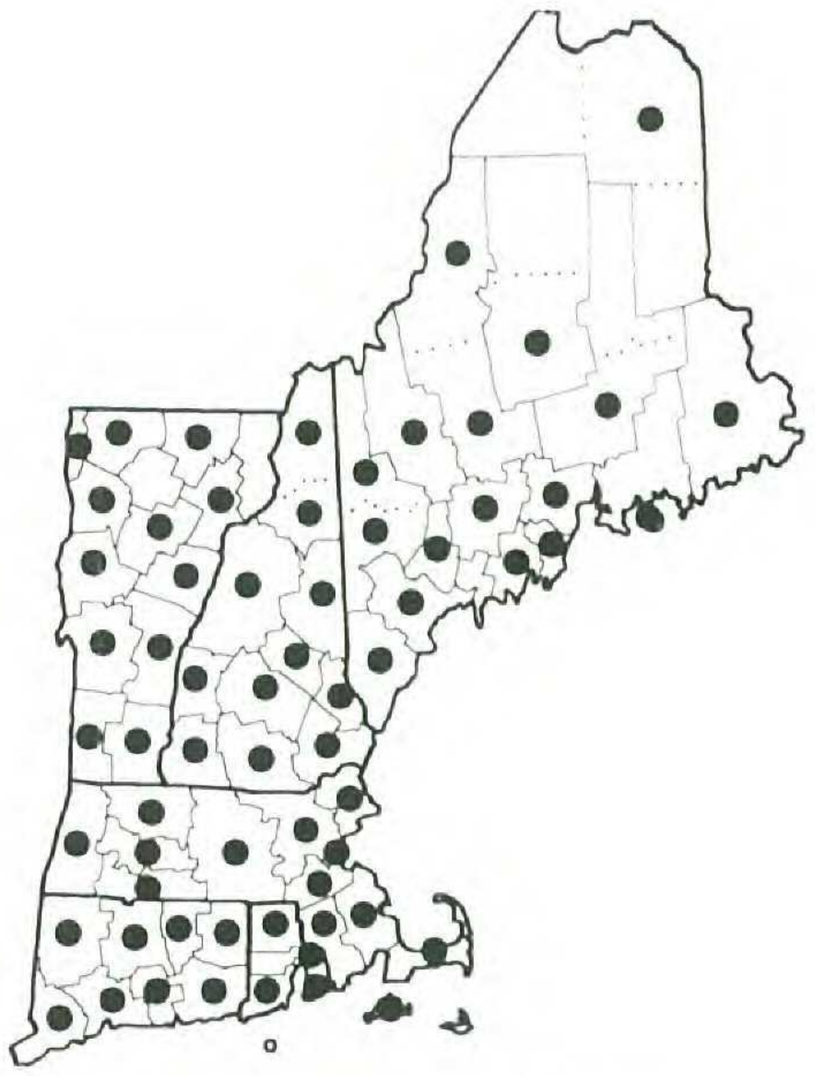
Polygonatum biflorum
var. *biflorum*



Polygonatum biflorum
var. *commutatum*

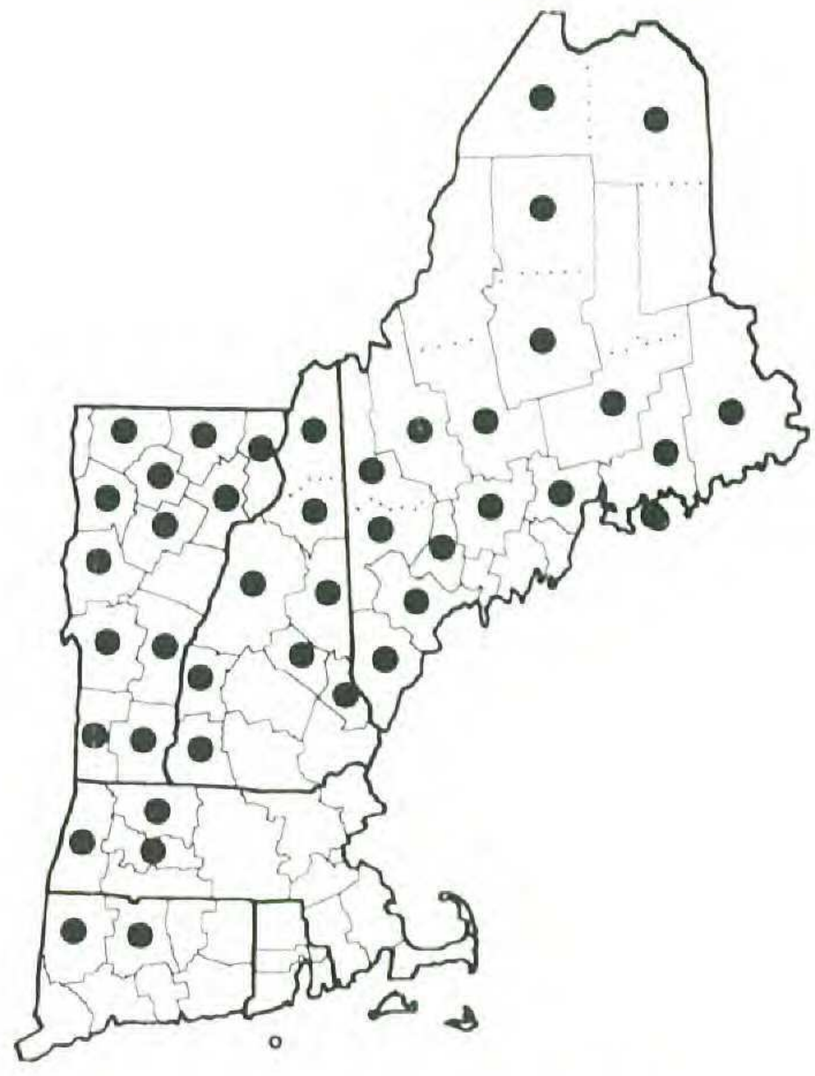
Figure 41. Distribution maps for *ORNITHOGALUM NUTANS*, *O. UMBELLATUM*, *Polygonatum biflorum* var. *biflorum*, and *P. biflorum* var. *commutatum*.

POLYGONATUM LATIFOLIUM



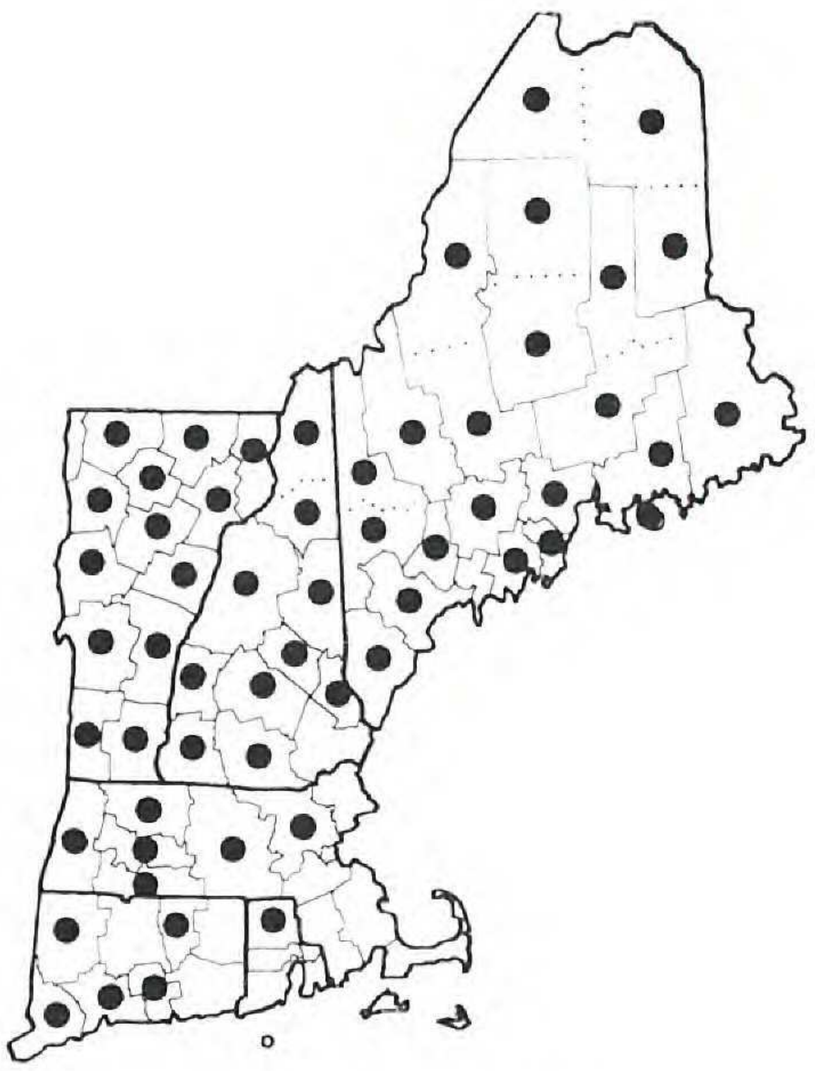
Polygonatum pubescens

SCILLA SIBERICA



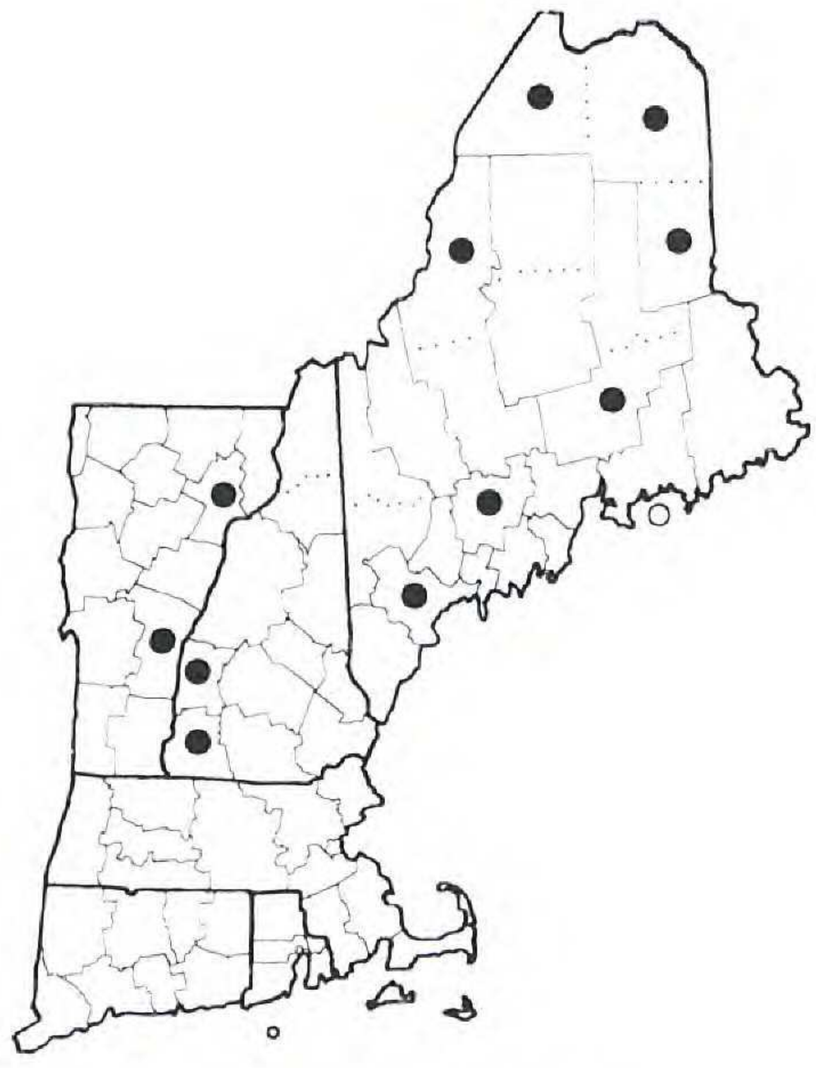
Streptopus amplexifolius

Figure 42. Distribution maps for *POLYGONATUM LATIFOLIUM*, *P. pubescens*, *SCILLA SIBERICA*, and *Streptopus amplexifolius*.



Streptopus lanceolatus

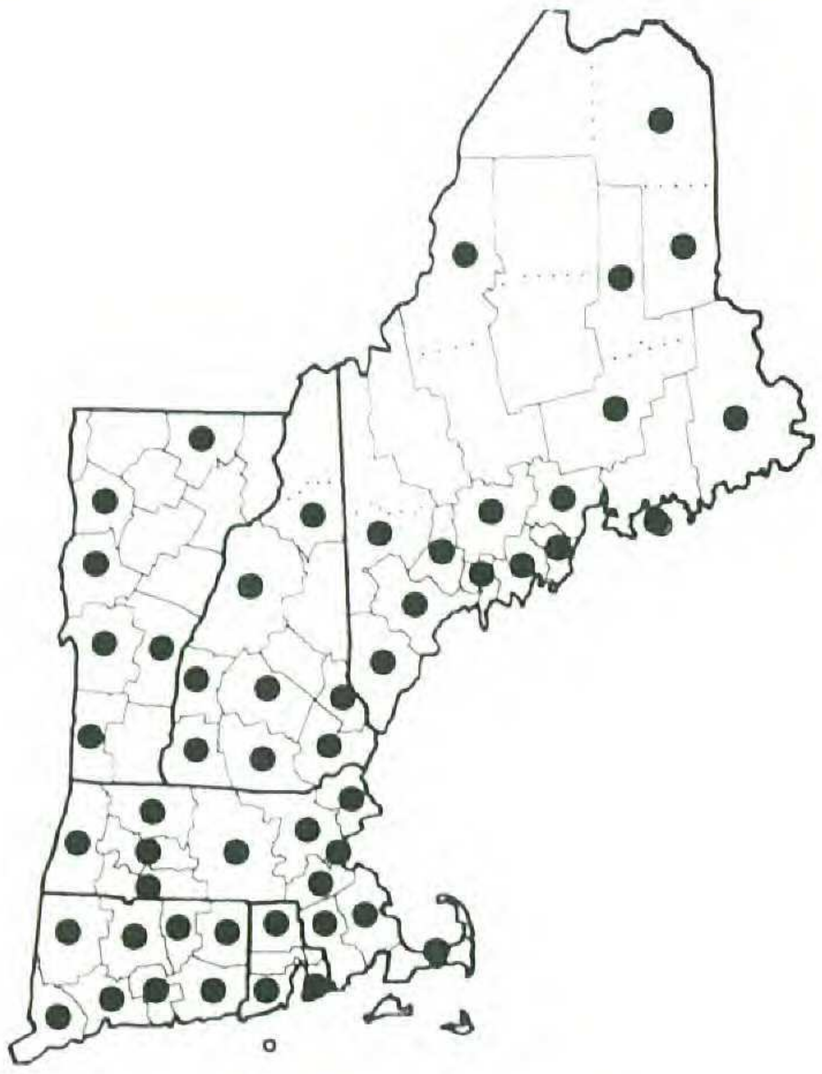
Streptopus X *oreopolus*



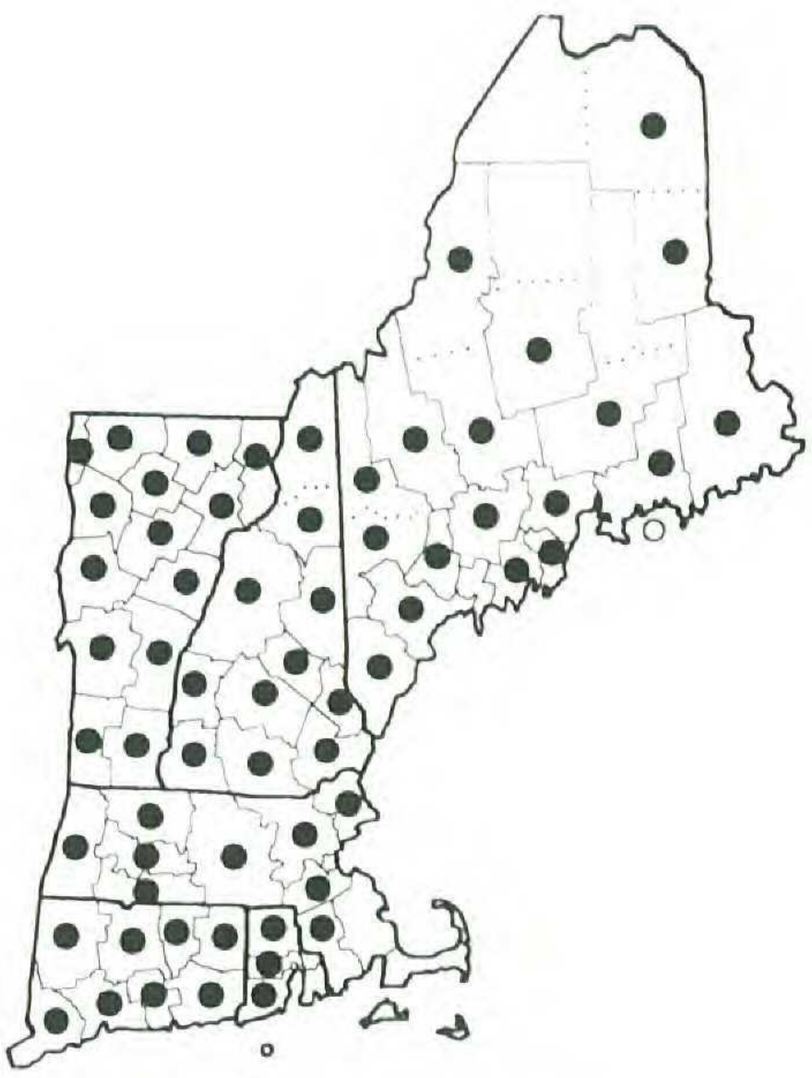
Tofieldia glutinosa

TRICYRTIS HIRTA

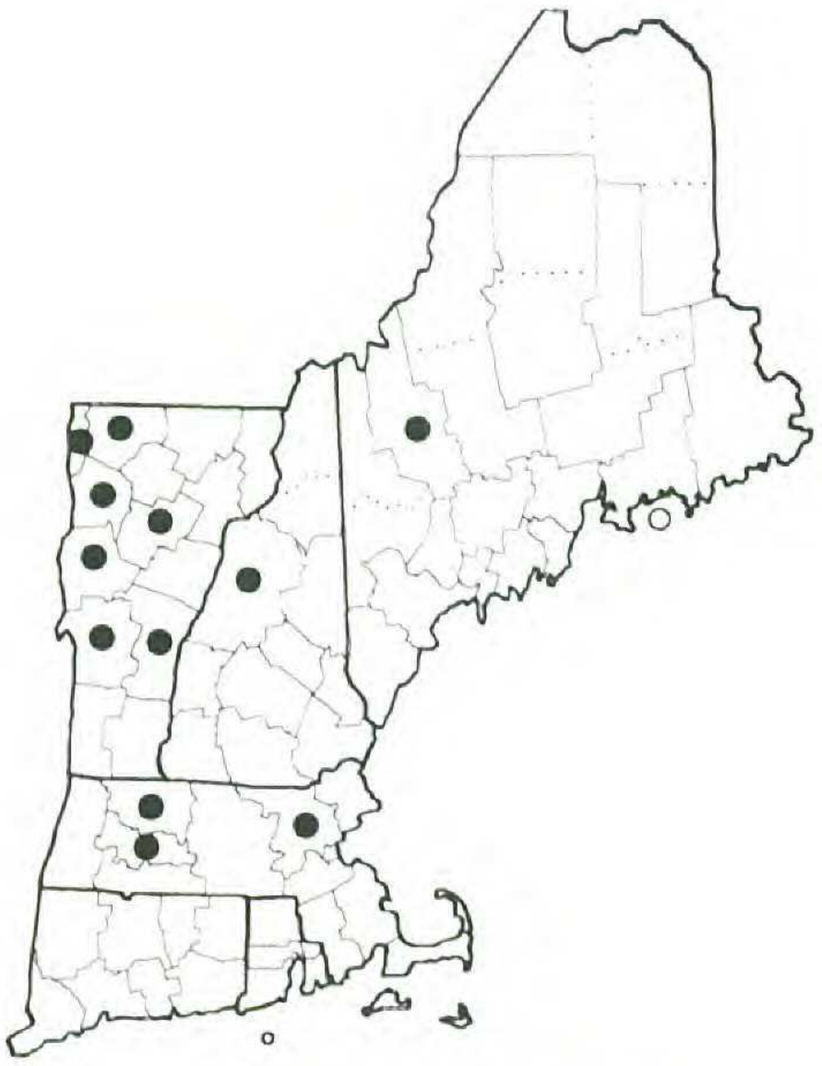
Figure 43. Distribution maps for *Streptopus lanceolatus, S.* X *oreopolus, Tofieldia glutinosa,* and *TRICYRTIS HIRTA.*



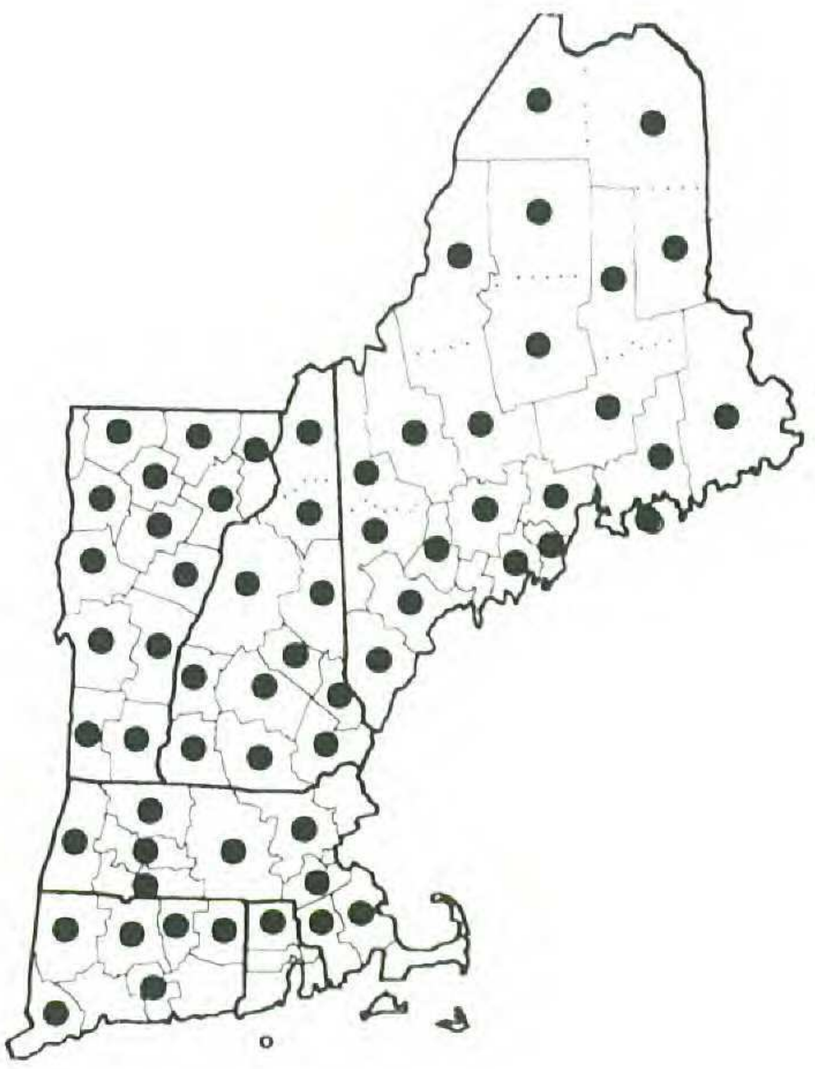
Trillium cernuum



Trillium erectum



Trillium grandiflorum

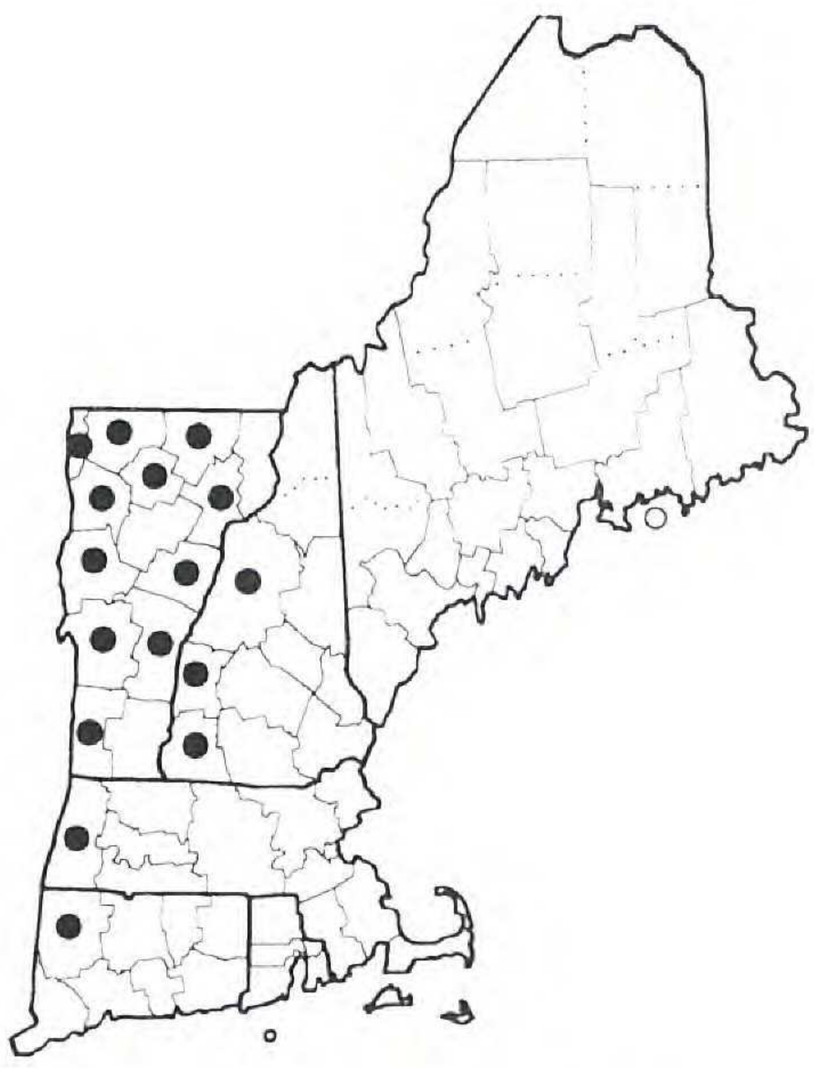


Trillium undulatum

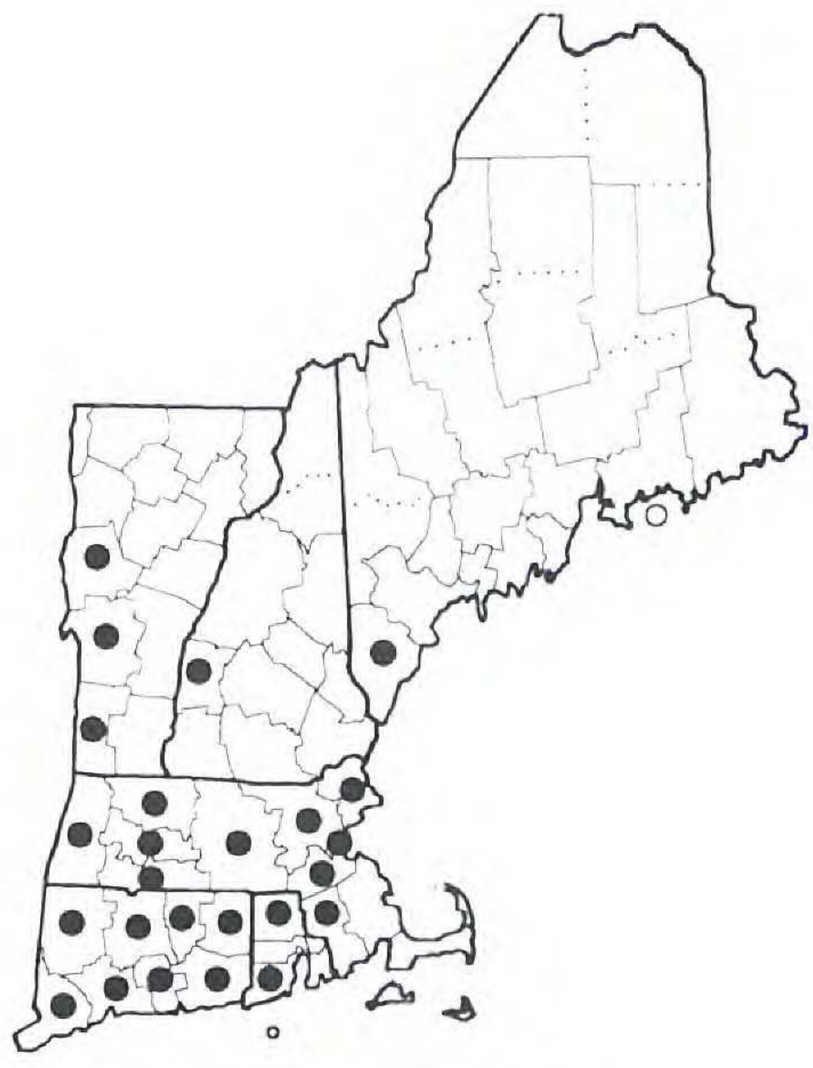
Figure 44. Distribution maps for *Trillium cernuum, T. erectum, T. grandiflorum,* and *T. undulatum.*

TULIPA GESNERIA

TULIPA SYLVESTRIS

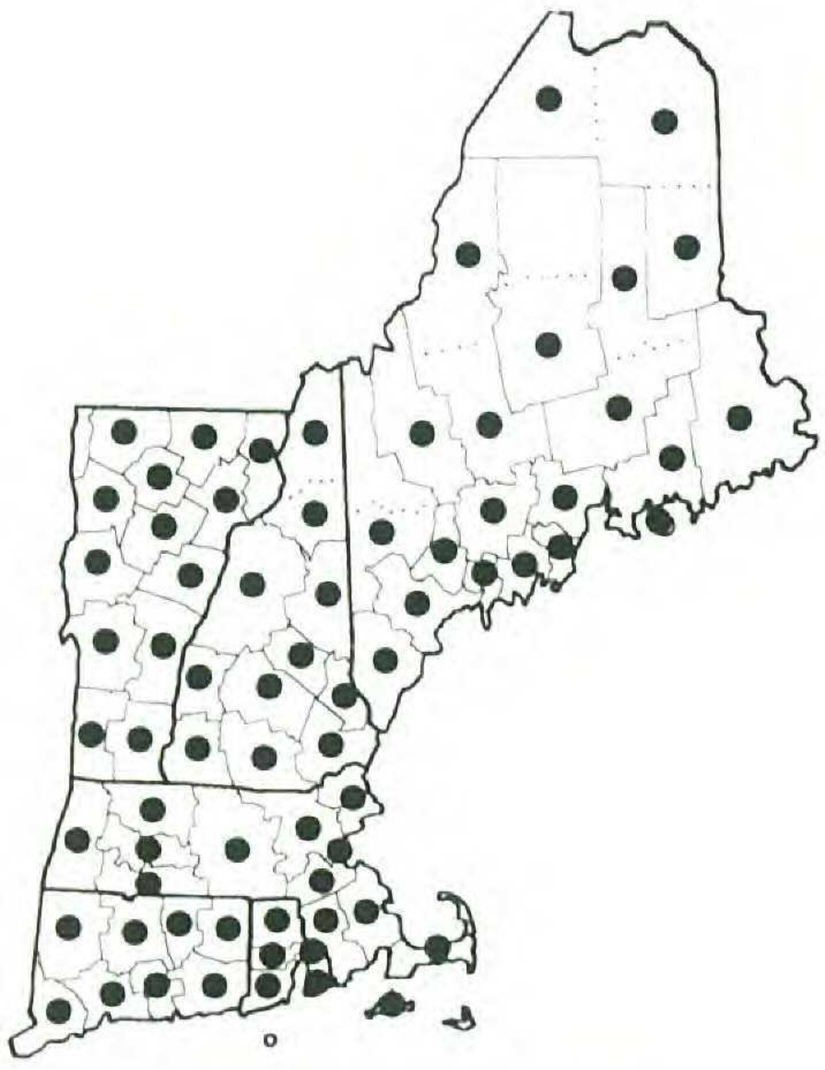


Uvularia grandiflora

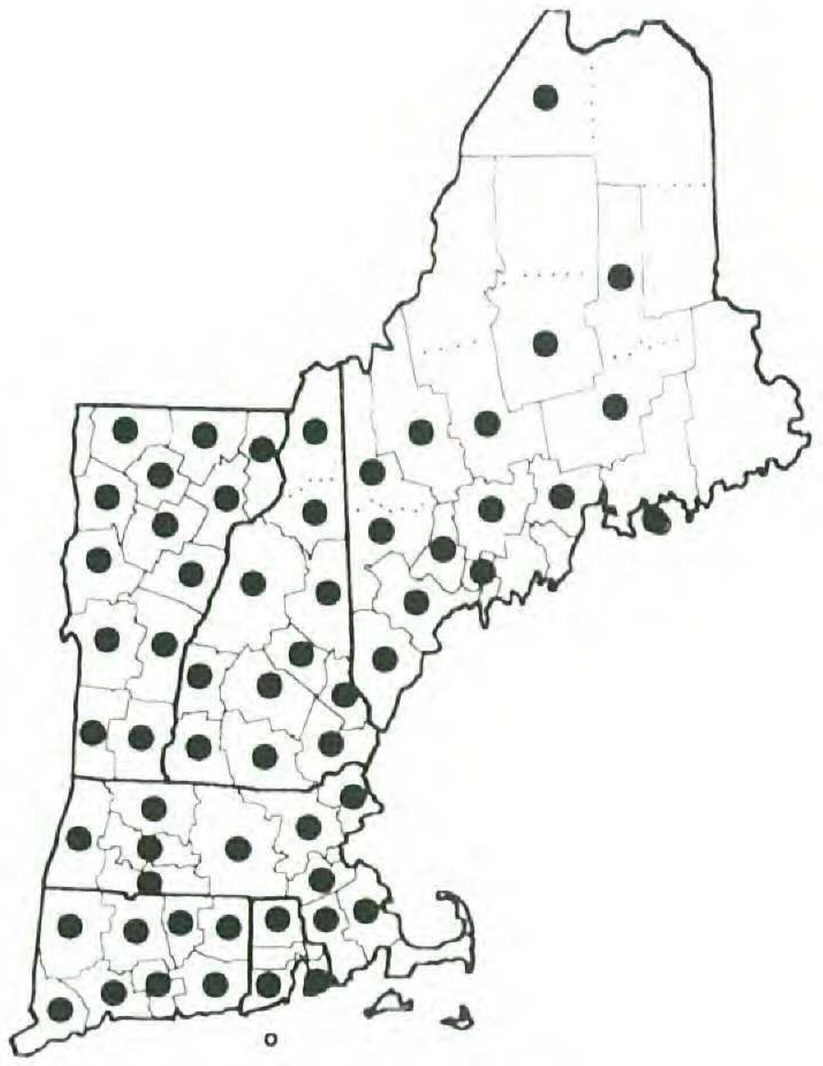


Uvularia perfoliata

Figure 45. Distribution maps for *TULIPA GESNERIA, T. SYLVESTRIS, Uvularia grandiflora,* and *U. perfoliata.*

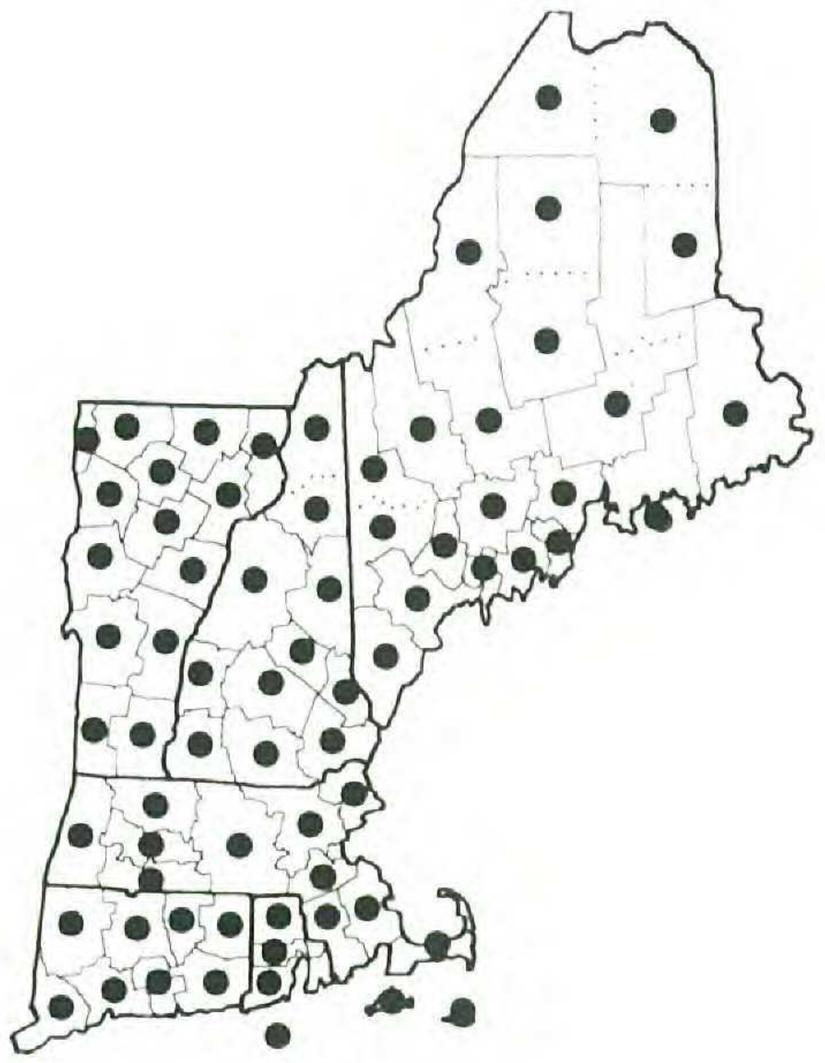


Uvularia sessilifolia



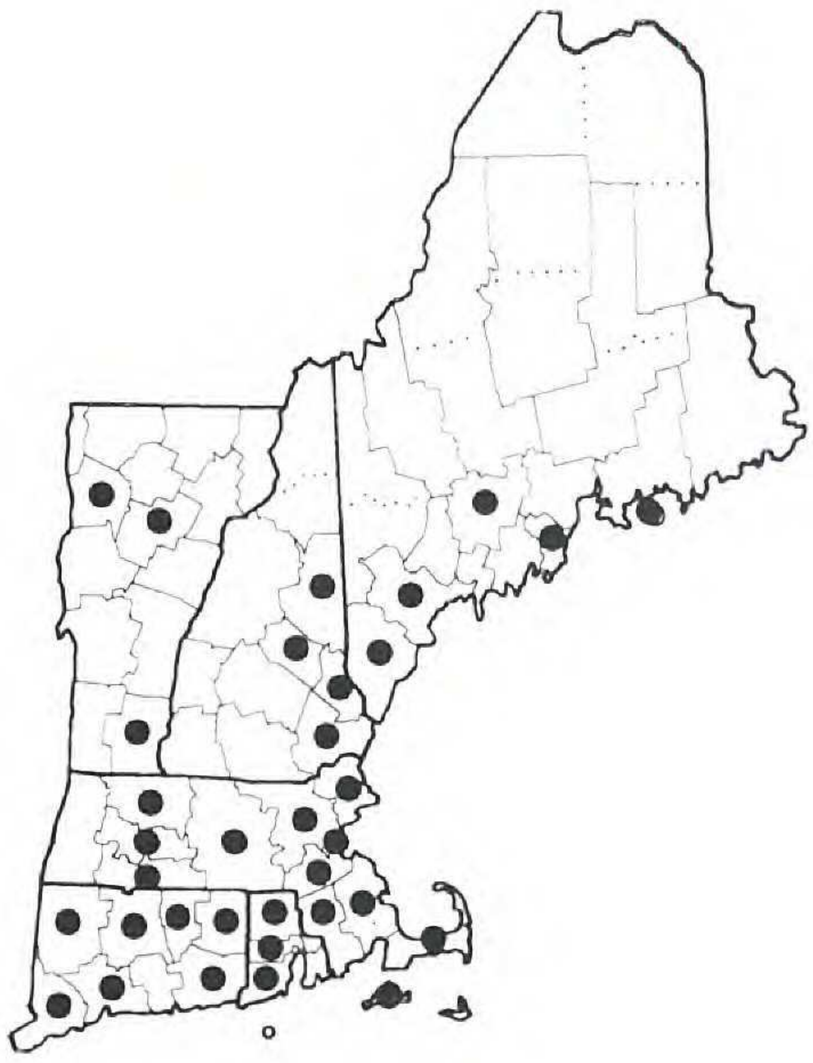
Veratrum viride

Zigadenus elegans var. *glaucus*

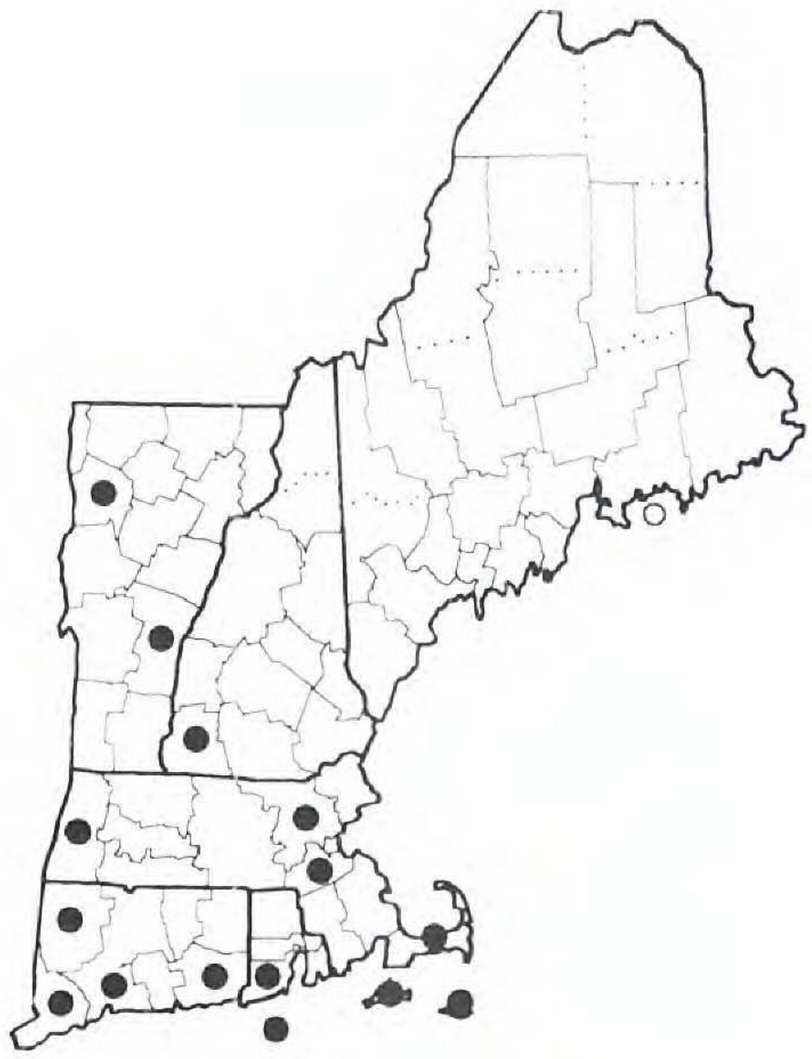


Najas flexilis

Figure 46. Distribution maps for *Uvularia sessilifolia, Veratrum viride, Zigadenus elegans* var. *glaucus,* and *Najas flexilis.*



Najas gracillima

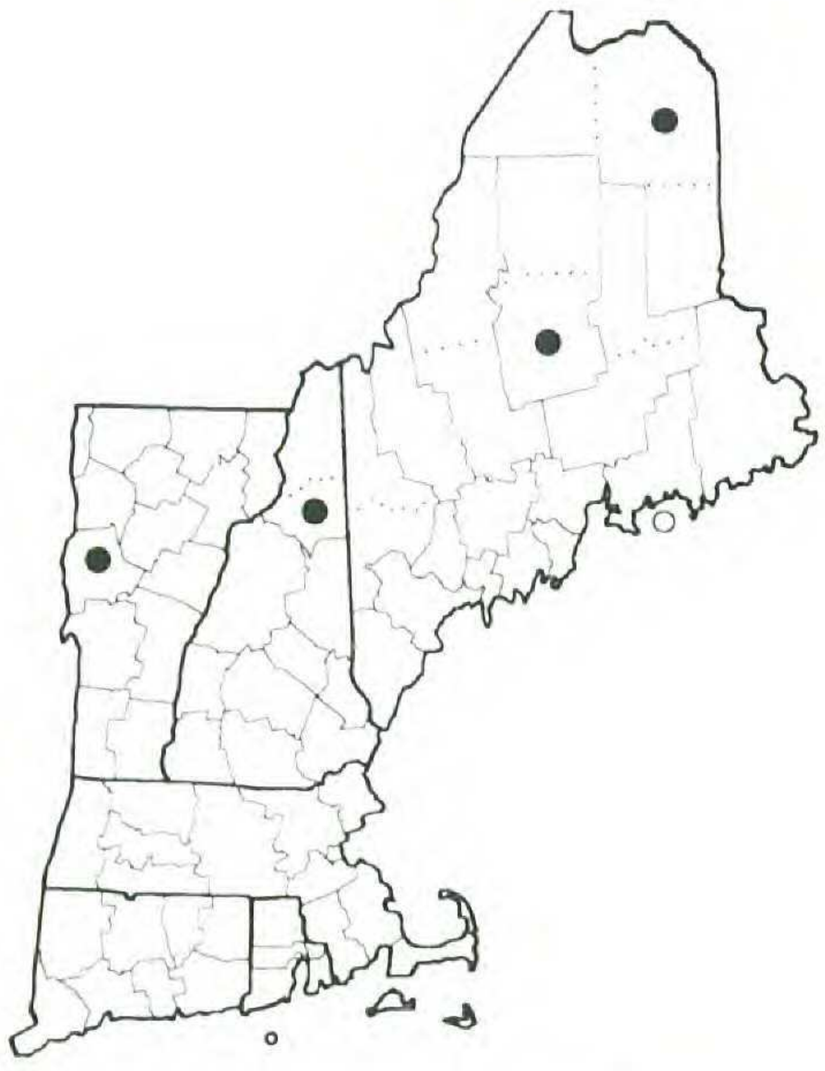


Najas guadalupensis
subsp. *guadalupensis*

Najas guadalupensis
subsp. *olivacea*

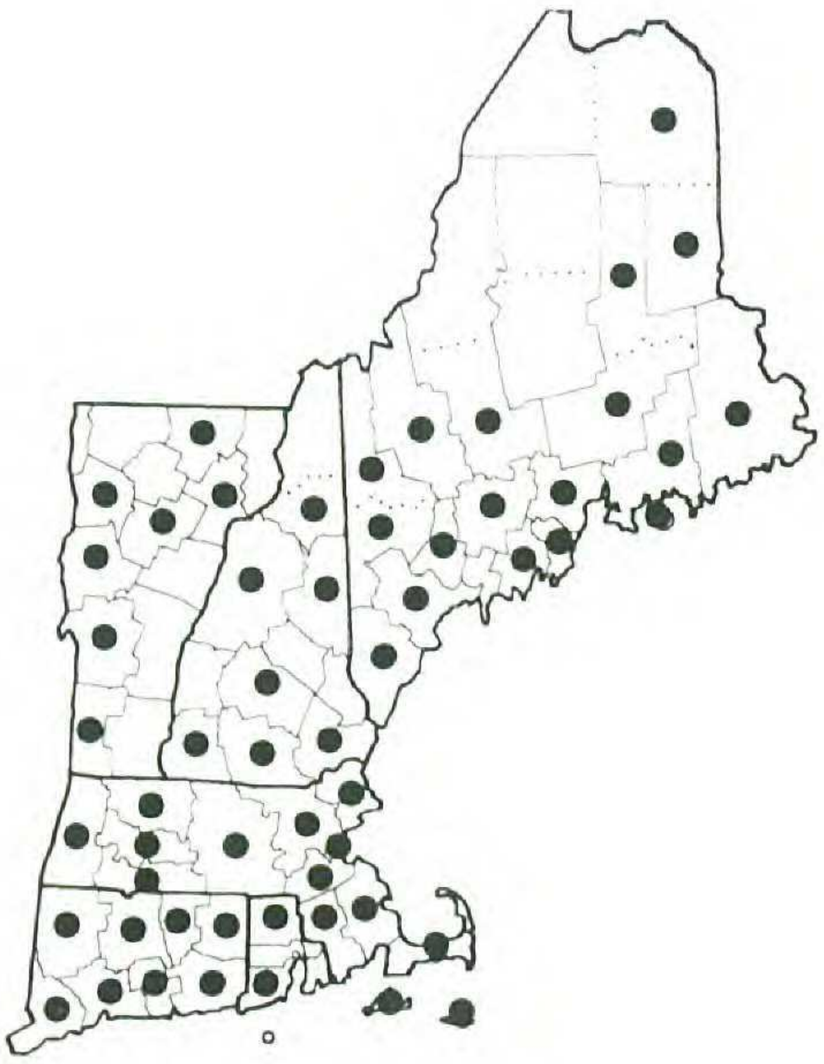
NAJAS MINOR

Figure 47. Distribution maps for *Najas gracillima, N. guadalupensis* subsp. *guadalupensis, N. guadalupensis* subsp. *olivacea,* and *N. MINOR.*

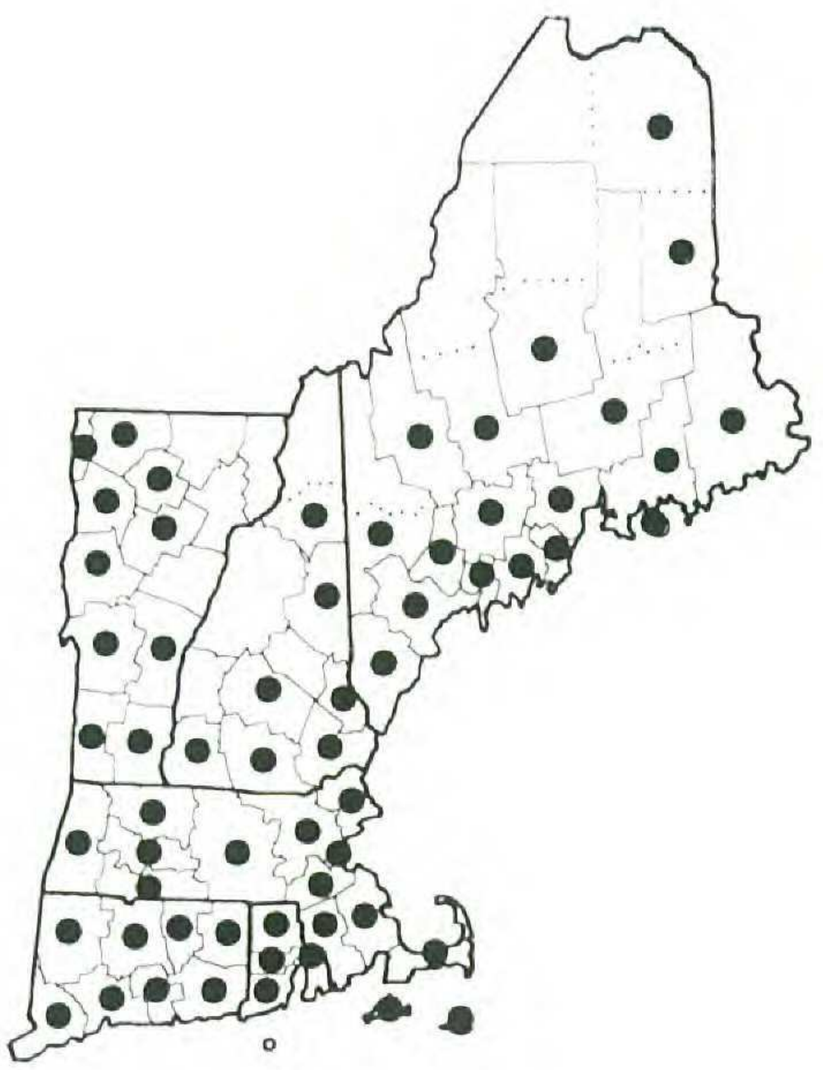


Amerorchis rotundifolia

Aplectrum hyemale

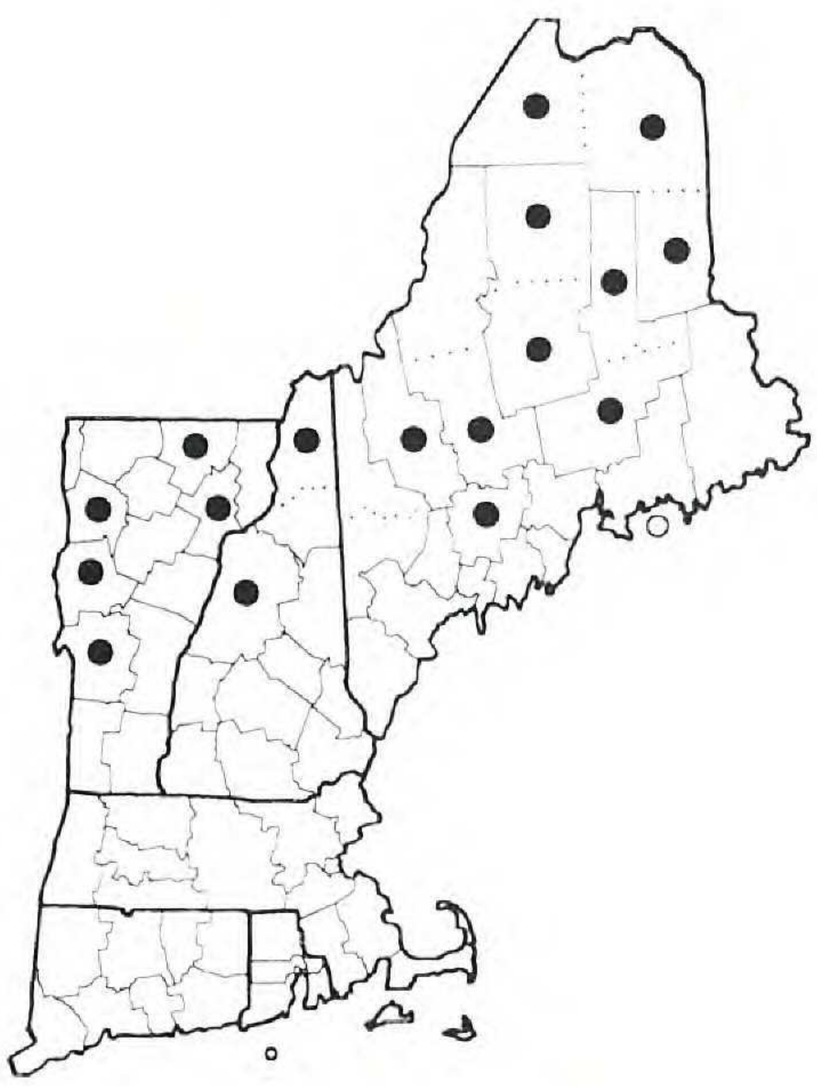


Arethusa bulbosa

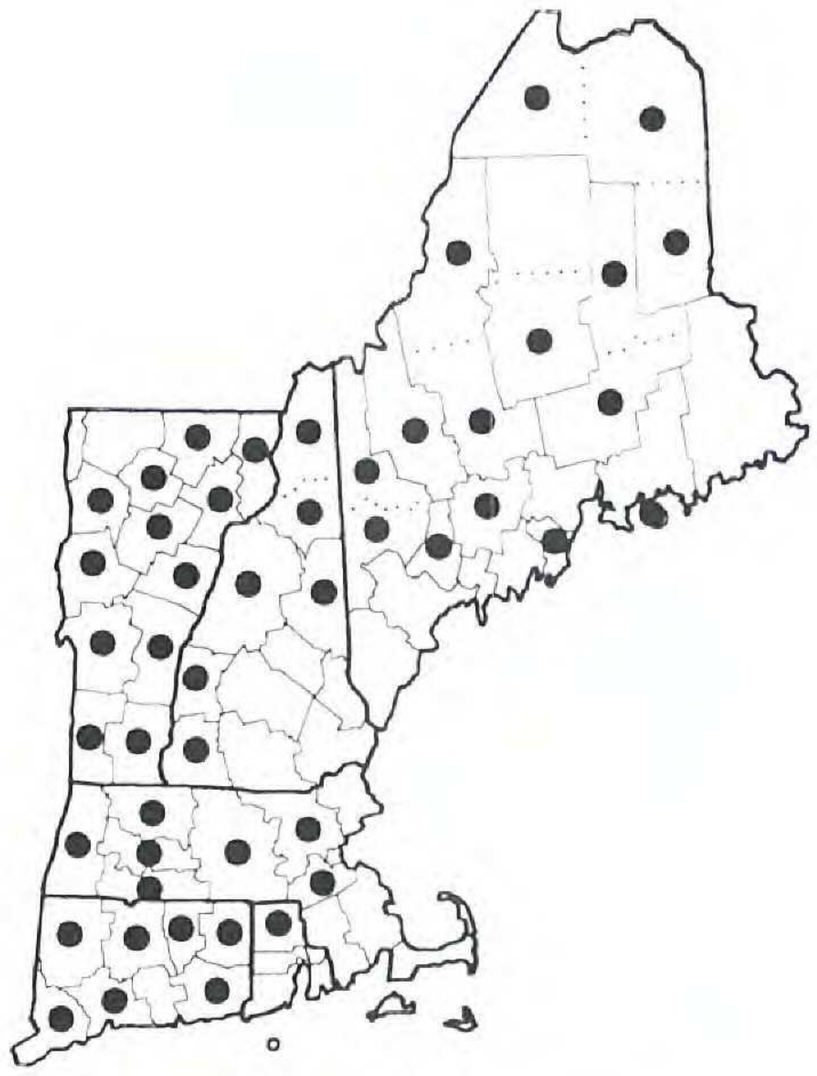


Calopogon tuberosus

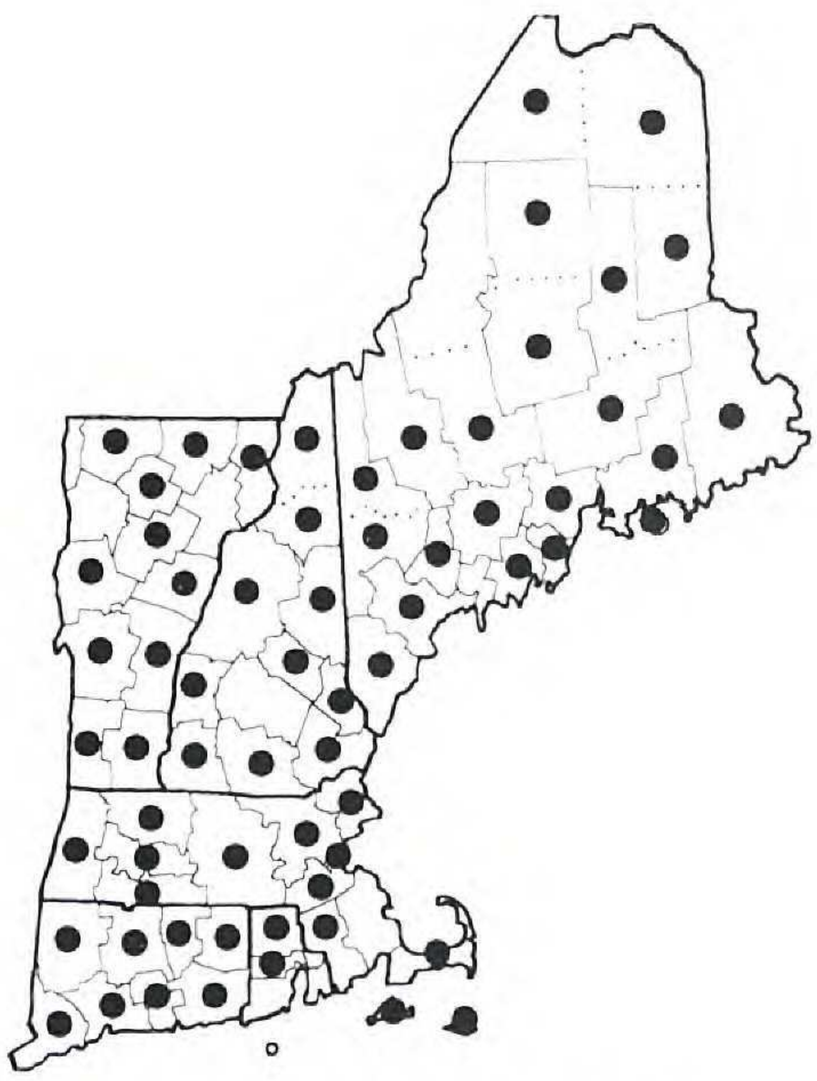
Figure 48. Distribution maps for *Amerorchis rotundifolia, Aplectrum hyemale, Arethusa bulbosa,* and *Calopogon tuberosus.*



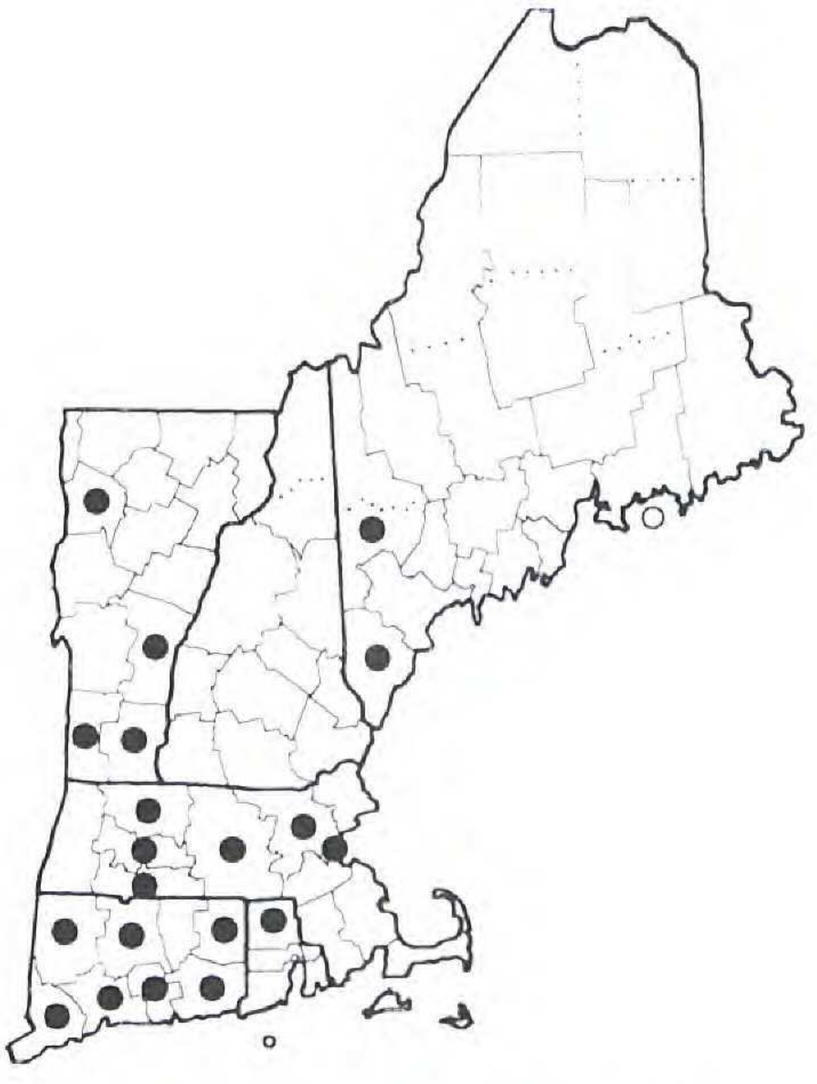
Calypso bulbosa
var. *americana*



Coeloglossum viride
var. *virescens*

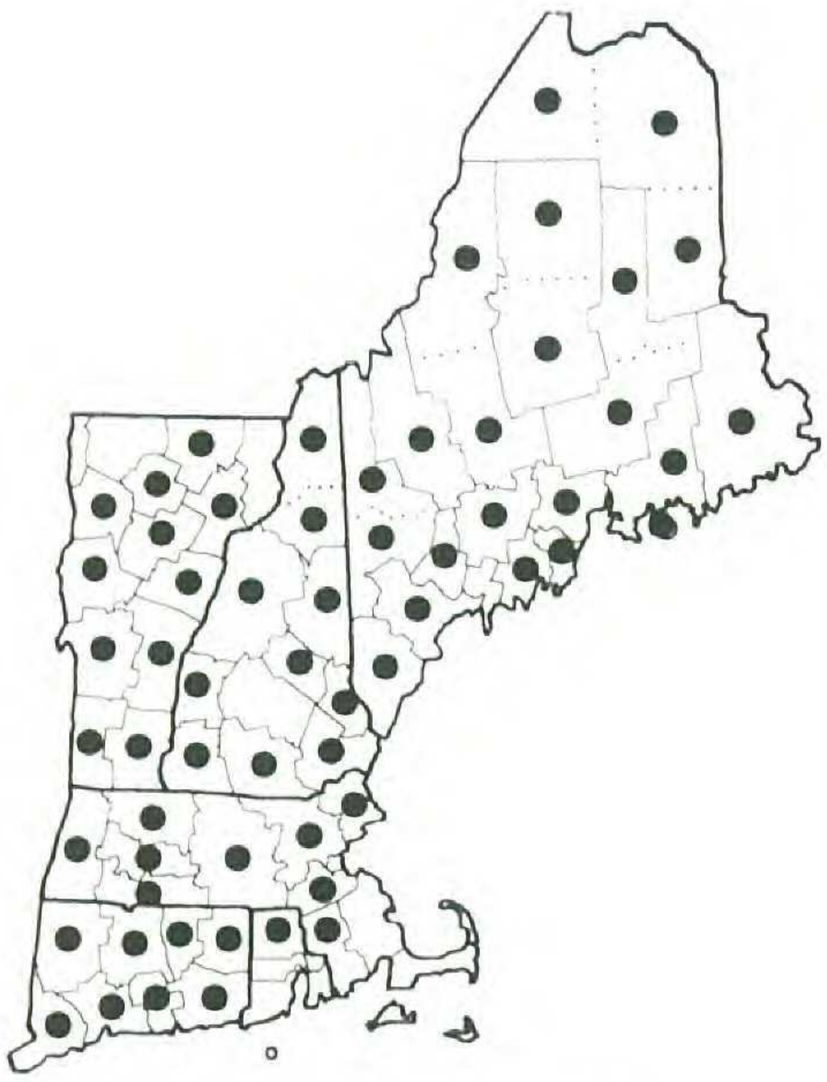


Corallorhiza maculata

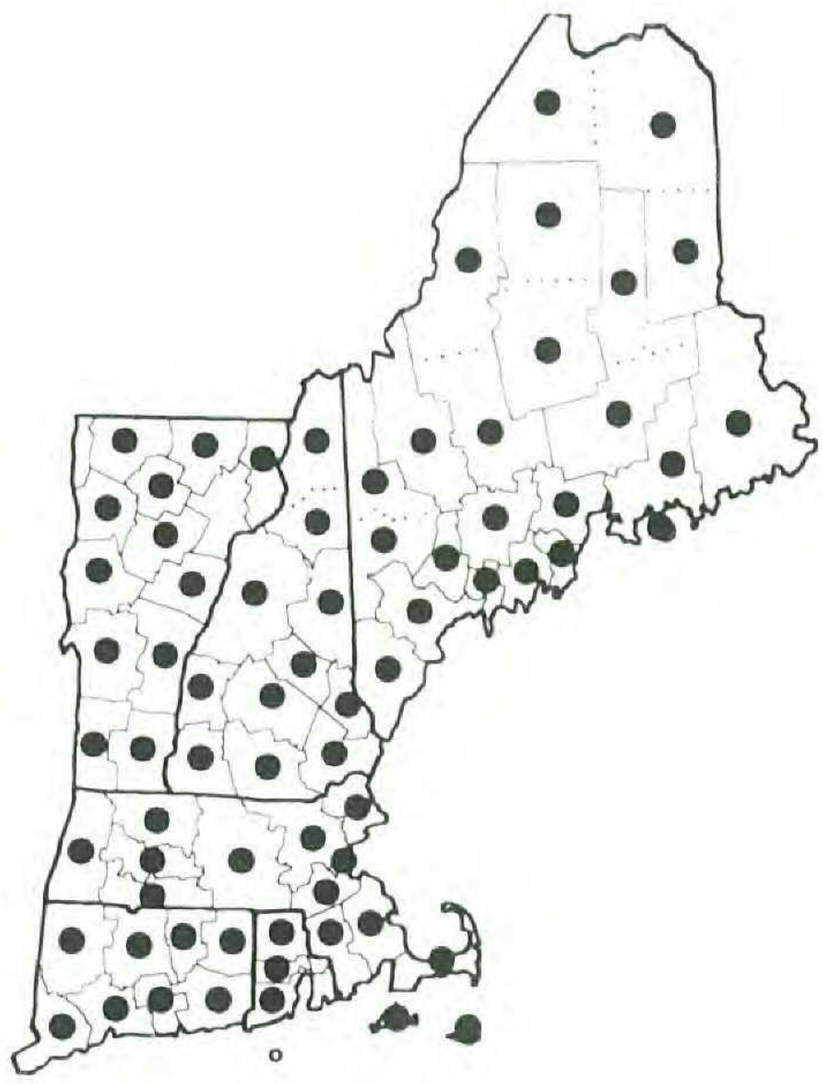


Corallorhiza odontorhiza

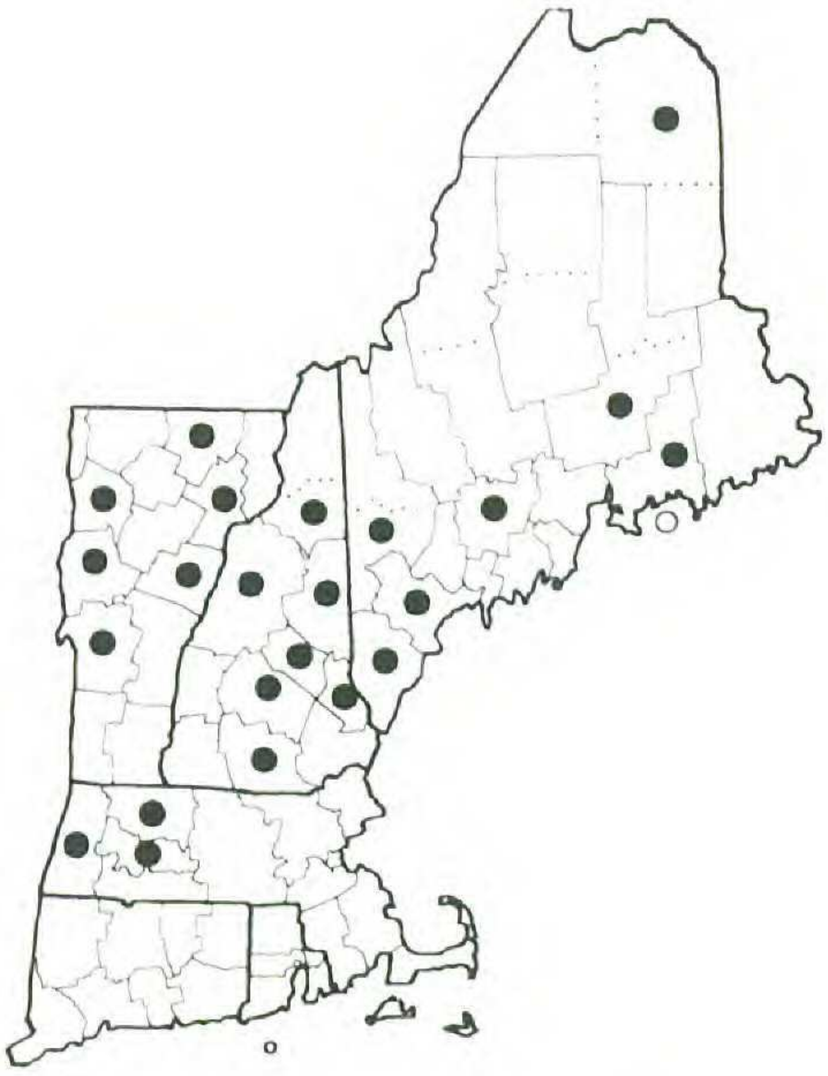
Figure 49. Distribution maps for *Calypso bulbosa* var. *americana*, *Coeloglossum viride* var. *virescens*, *Corallorhiza maculata*, and *C. odontorhiza*.



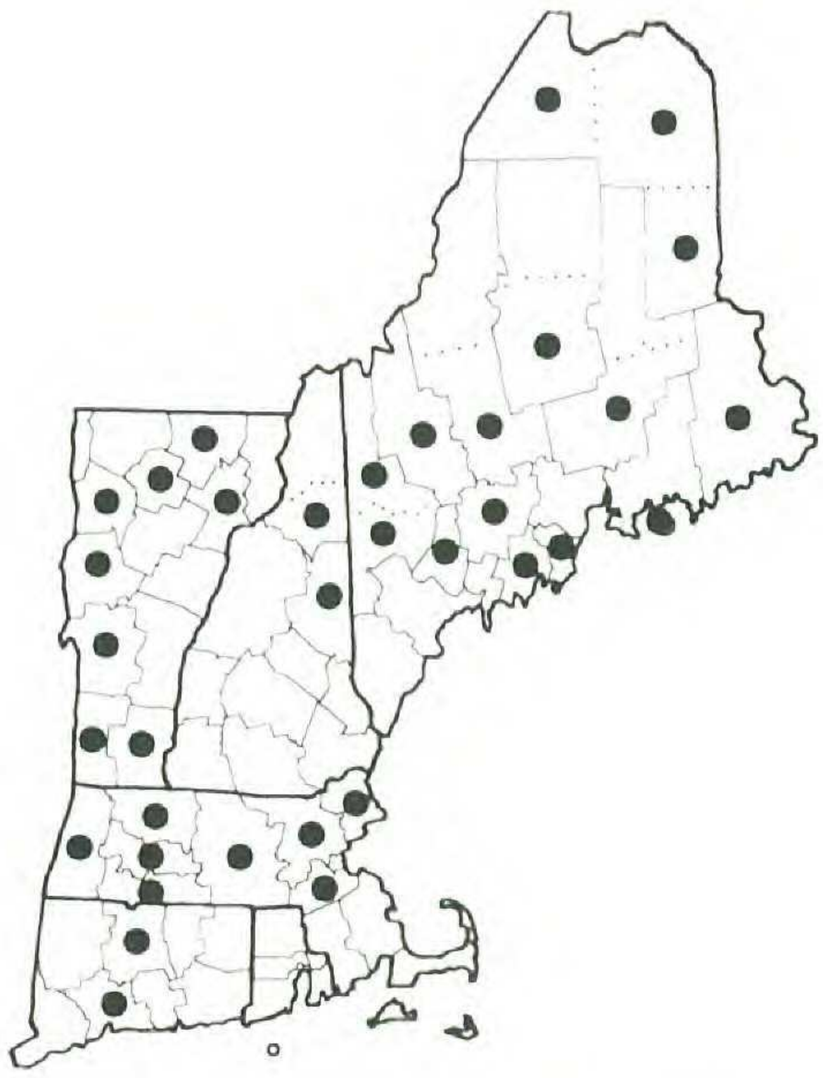
Corallorhiza trifida



Cypripedium acaule

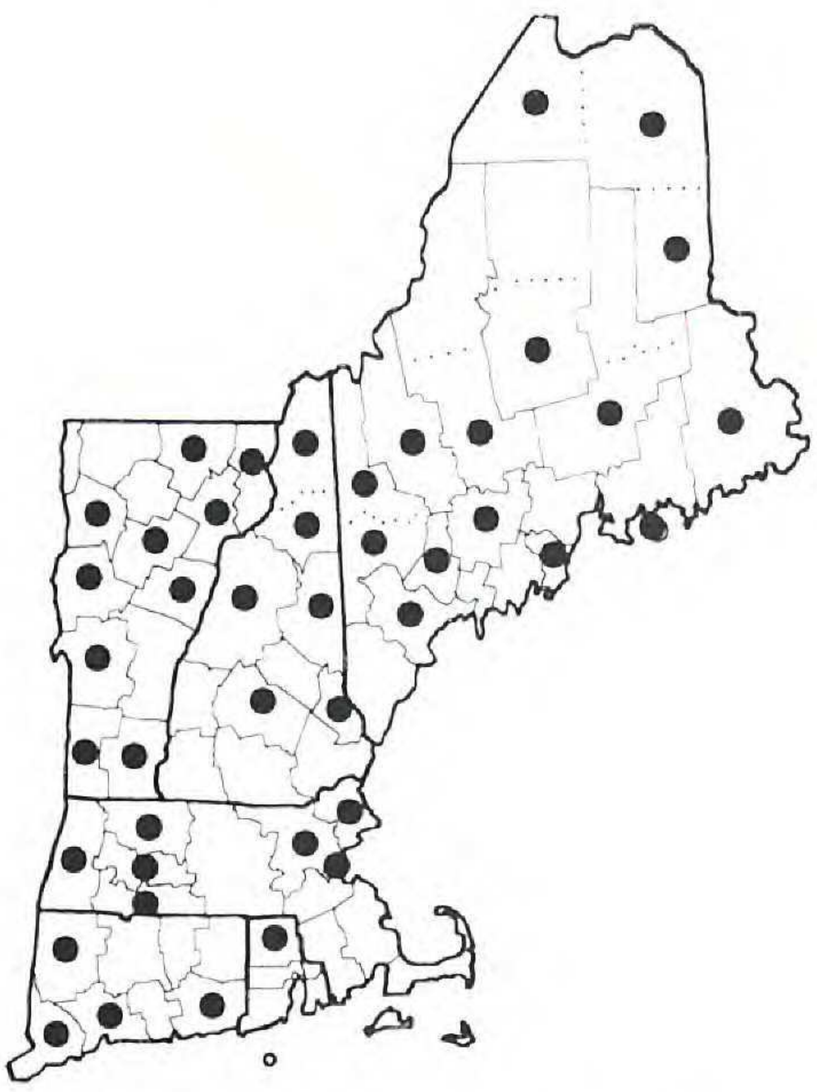


Cypripedium arietinum

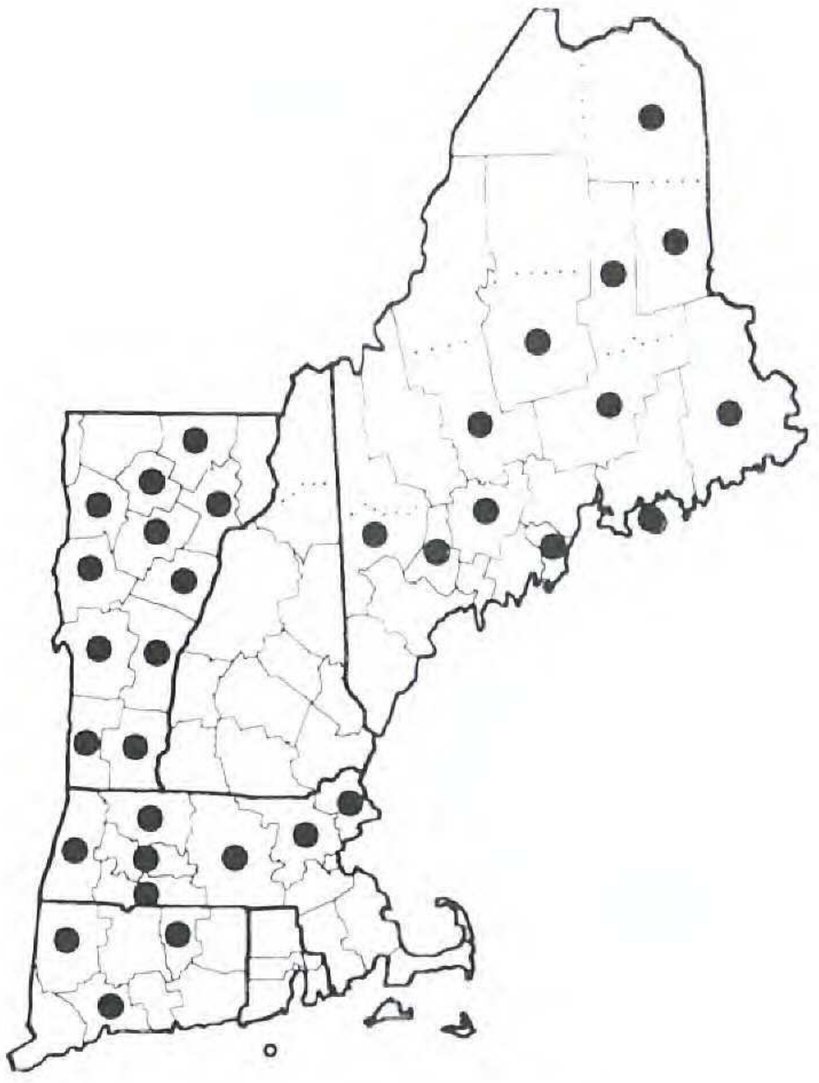


Cypripedium parviflorum var. *parviflorum*

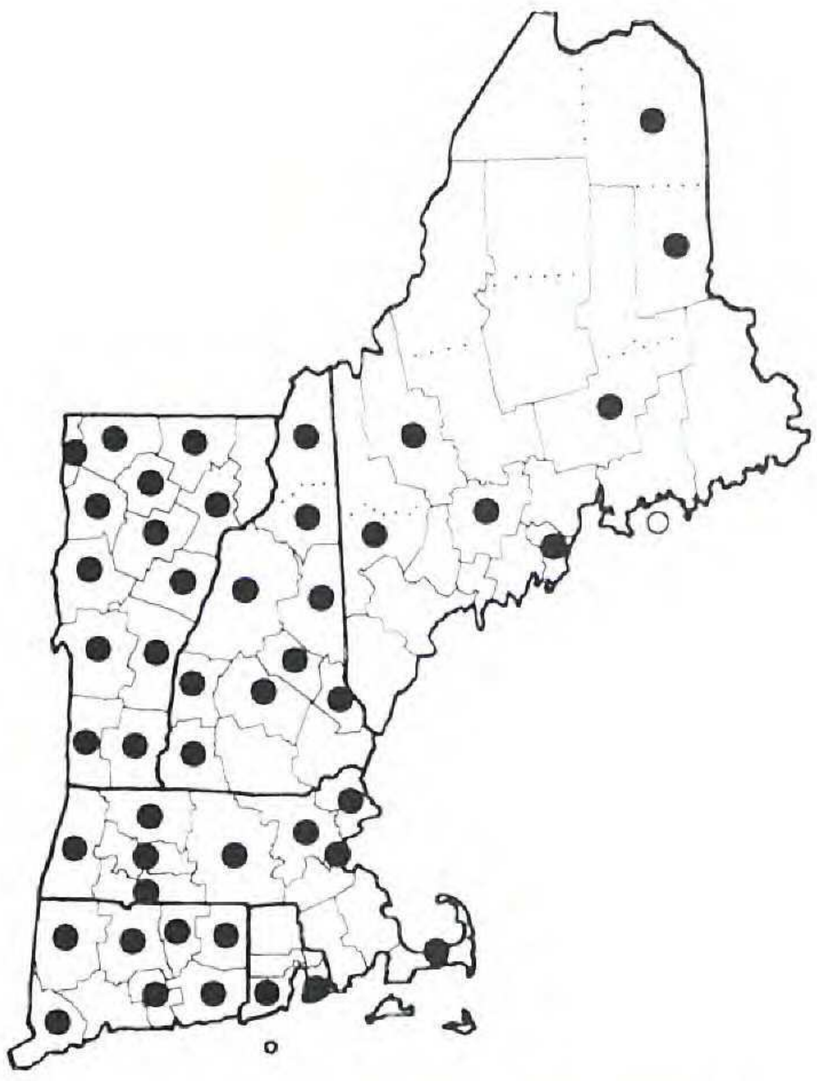
Figure 50. Distribution maps for *Corallorhiza trifida, Cypripedium acaule, C. arietinum,* and *C. parviflorum* var. *parviflorum.*



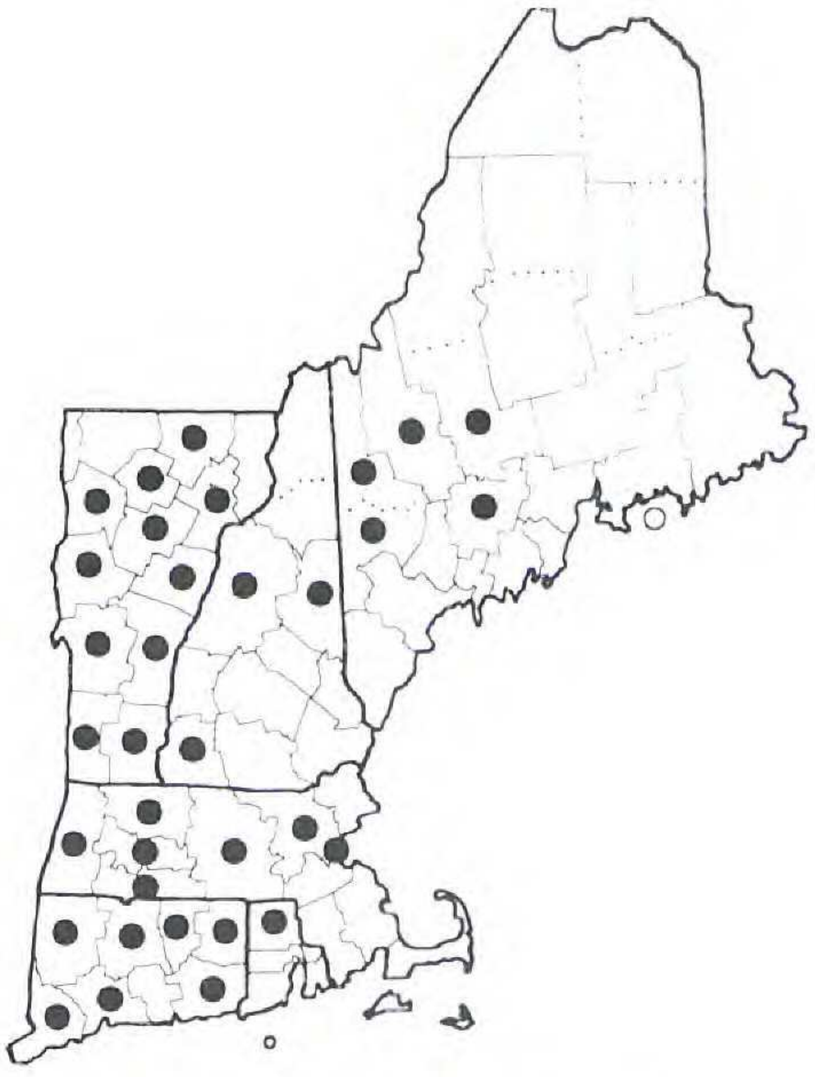
Cypripedium parviflorum var. *pubescens*



Cypripedium reginae



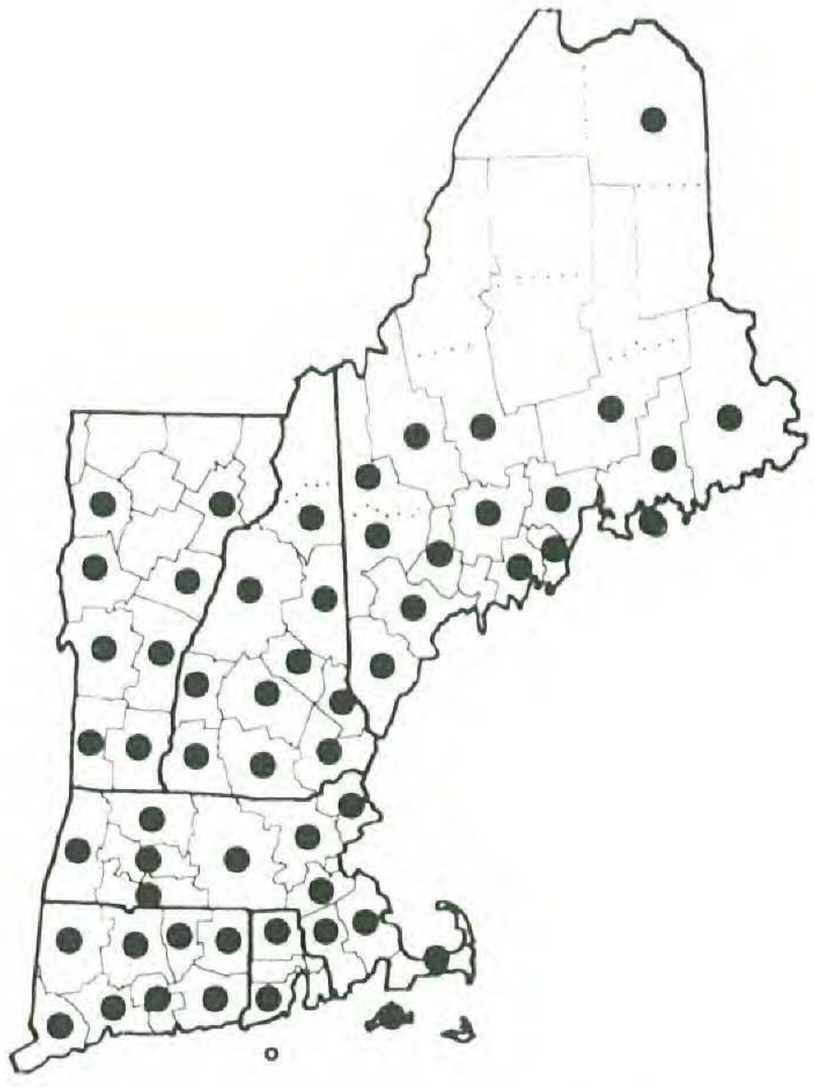
EPIPACTIS HELLEBORINE



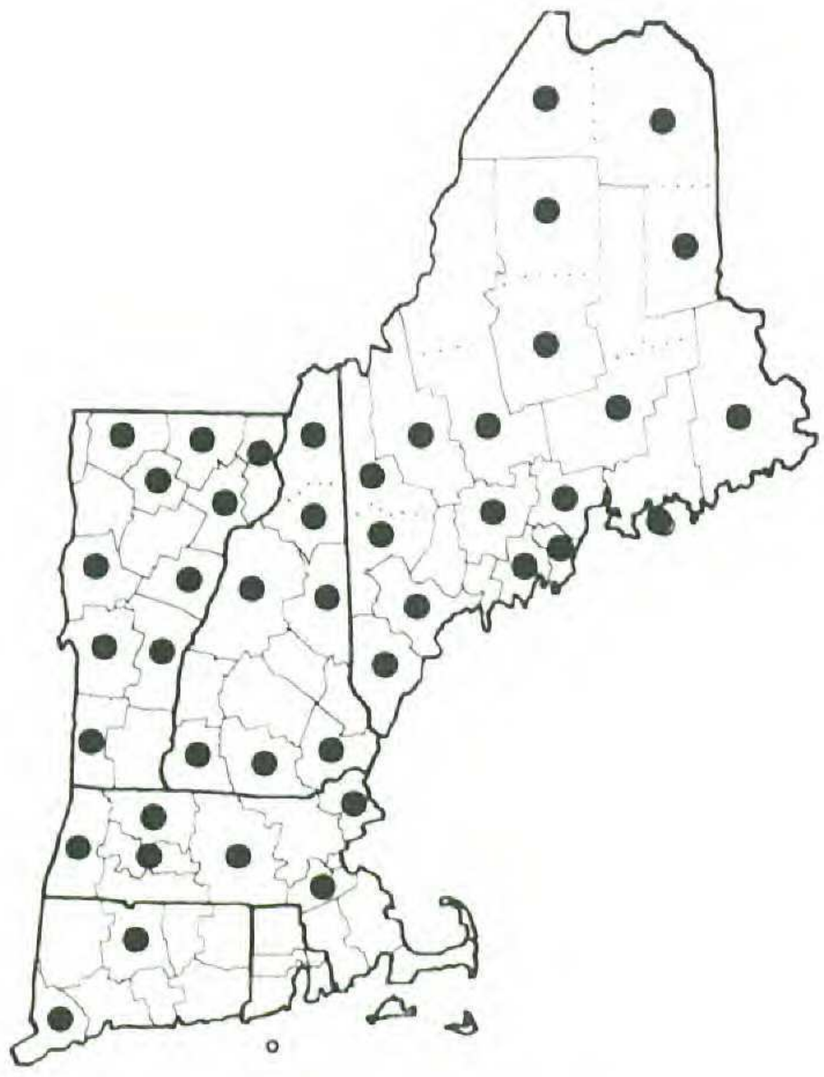
Galearis spectabilis

Figure 51. Distribution maps for *Cypripedium parviflorum* var. *pubescens*, *C. reginae*, *EPIPACTIS HELLEBORINE*, and *Galearis spectabilis*.

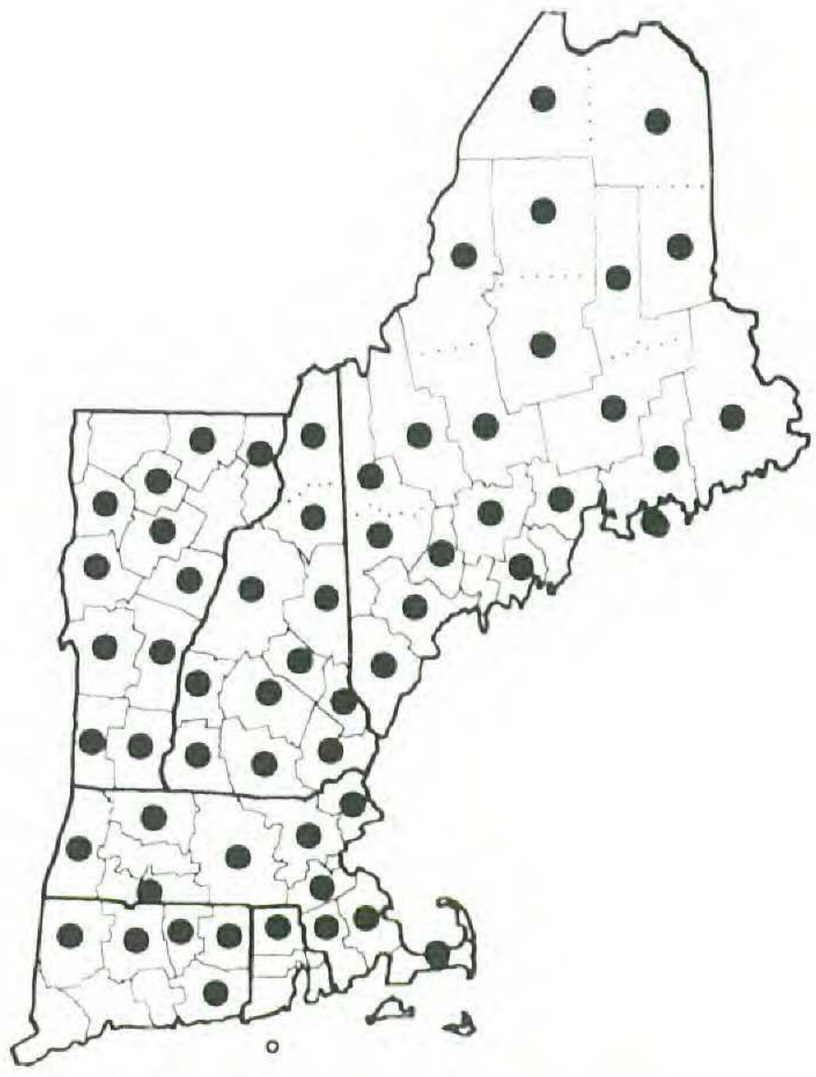
Goodyera oblongifolia



Goodyera pubescens

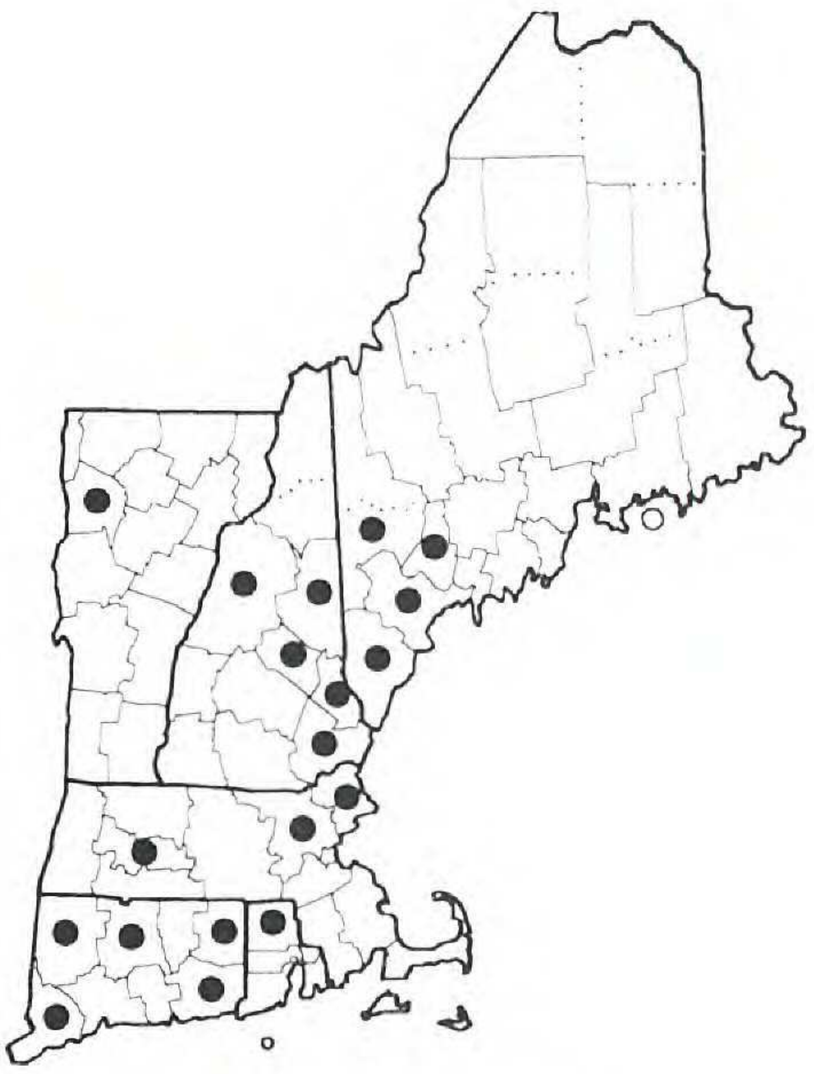


Goodyera repens
var. *ophioides*

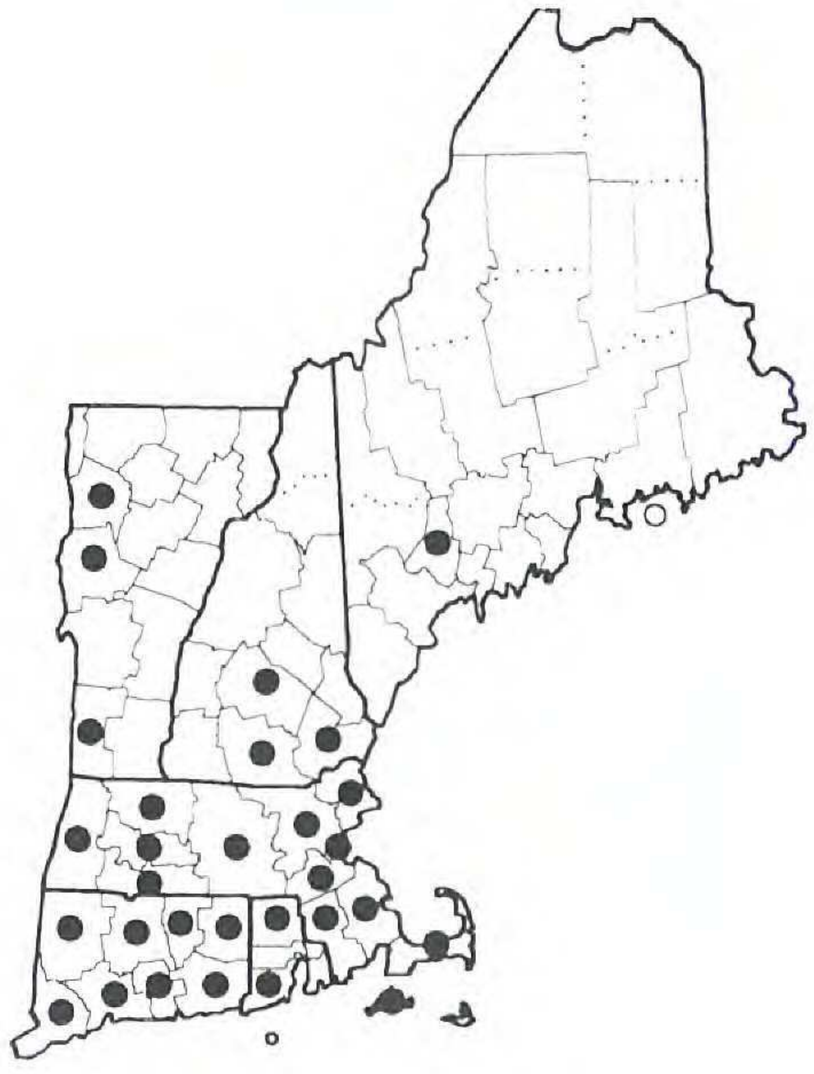


Goodyera X *tesselata*

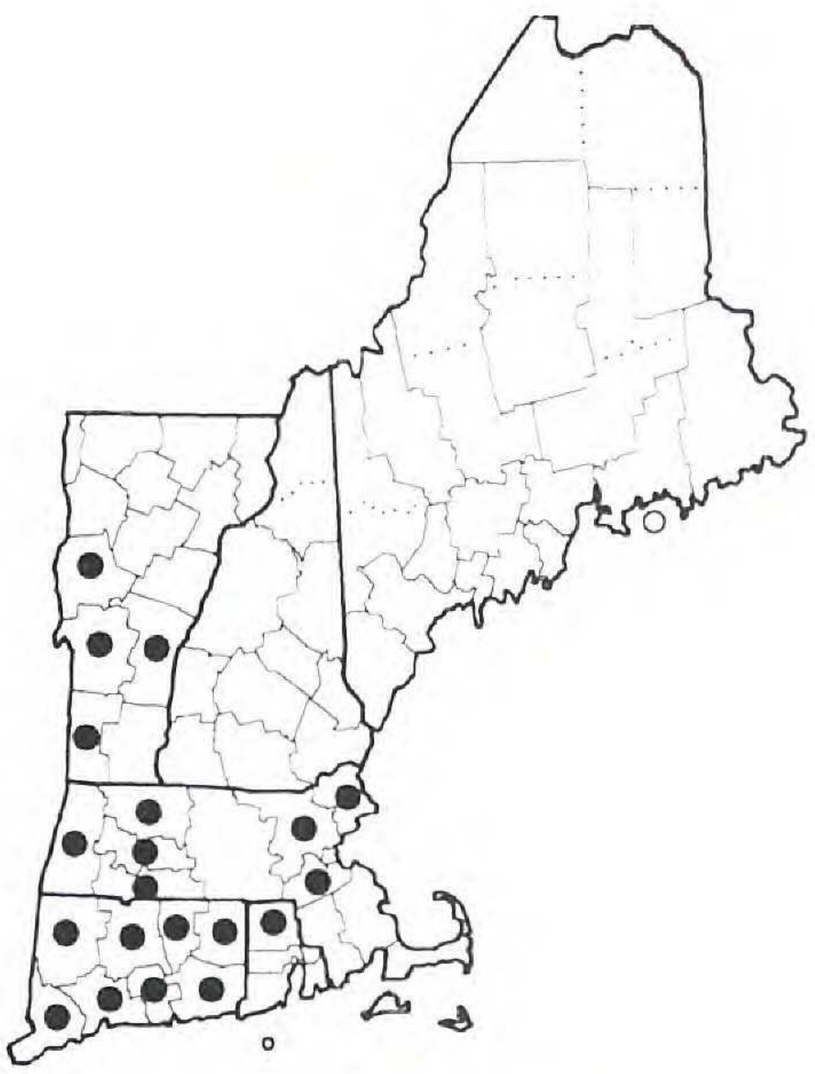
Figure 52. Distribution maps for *Goodyera oblongifolia, G. pubescens, G. repens* var. *ophioides,* and *G.* X *tesselata.*



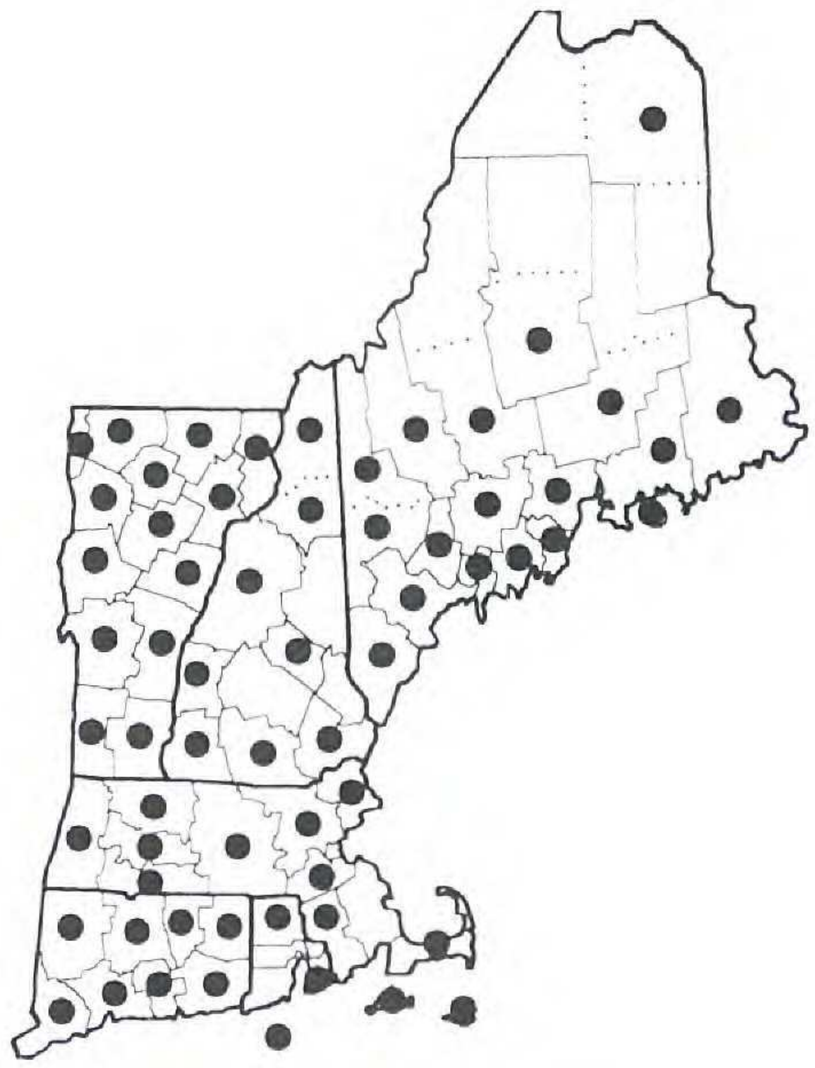
Isotria medeoloides



Isotria verticillata

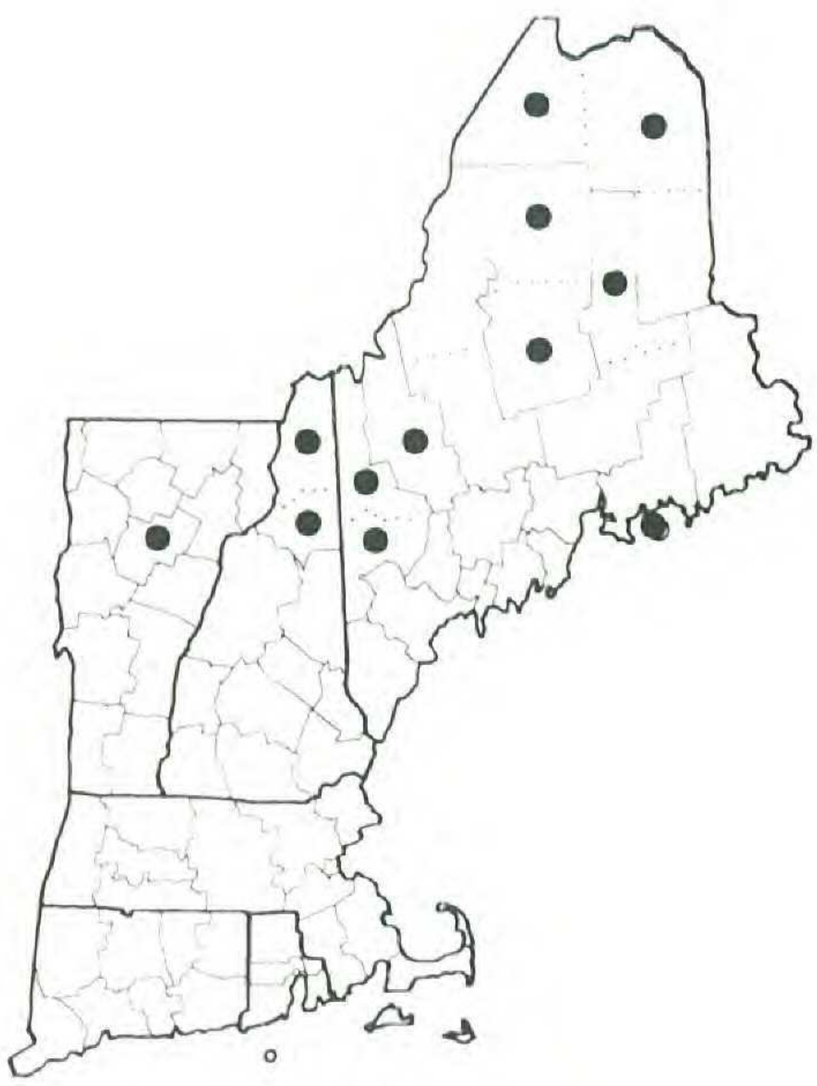


Liparis liliifolia



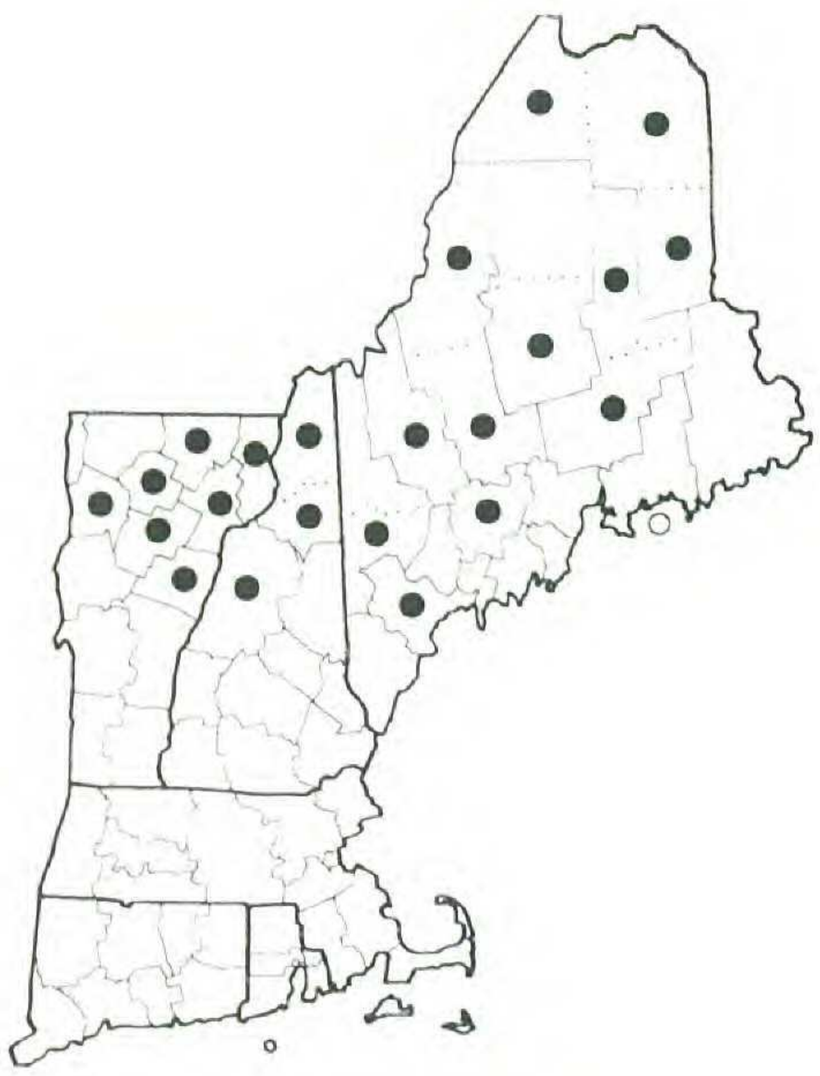
Liparis loeselii

Figure 53. Distribution maps for *Isotria medeoloides, I. verticillata, Liparis liliifolia,* and *L. loeselii.*

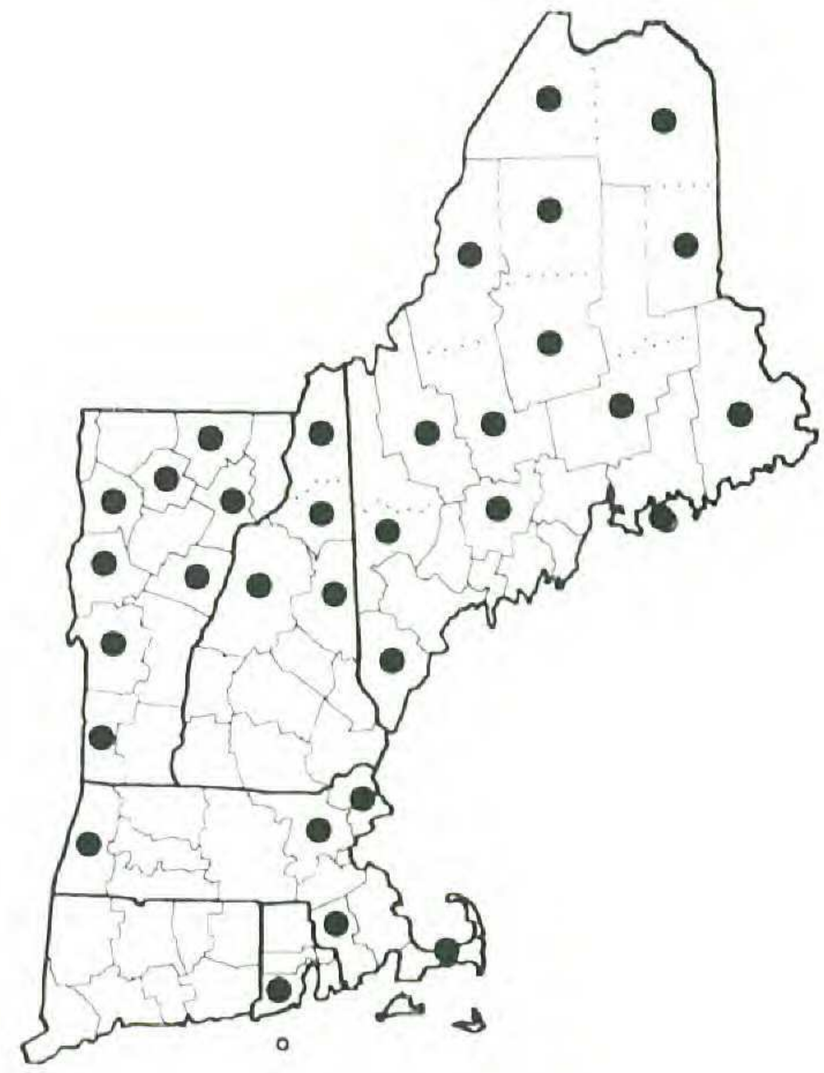


Listera auriculata

Listera australis



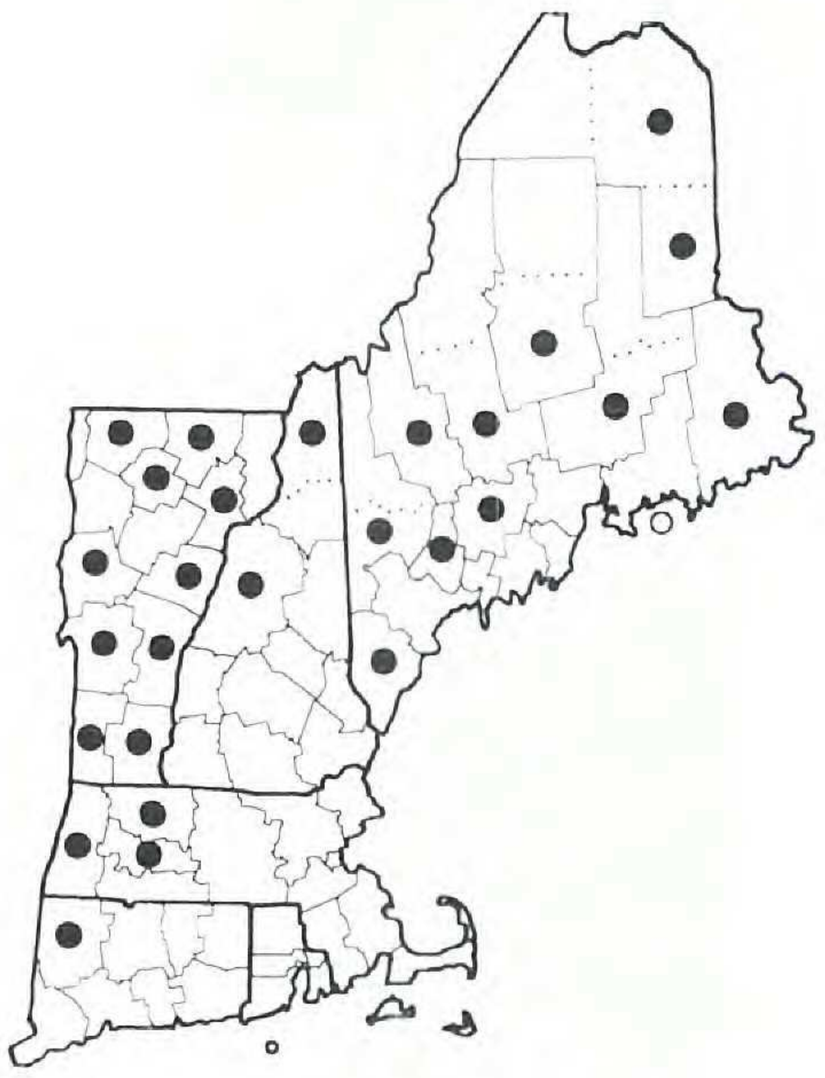
Listera convallarioides



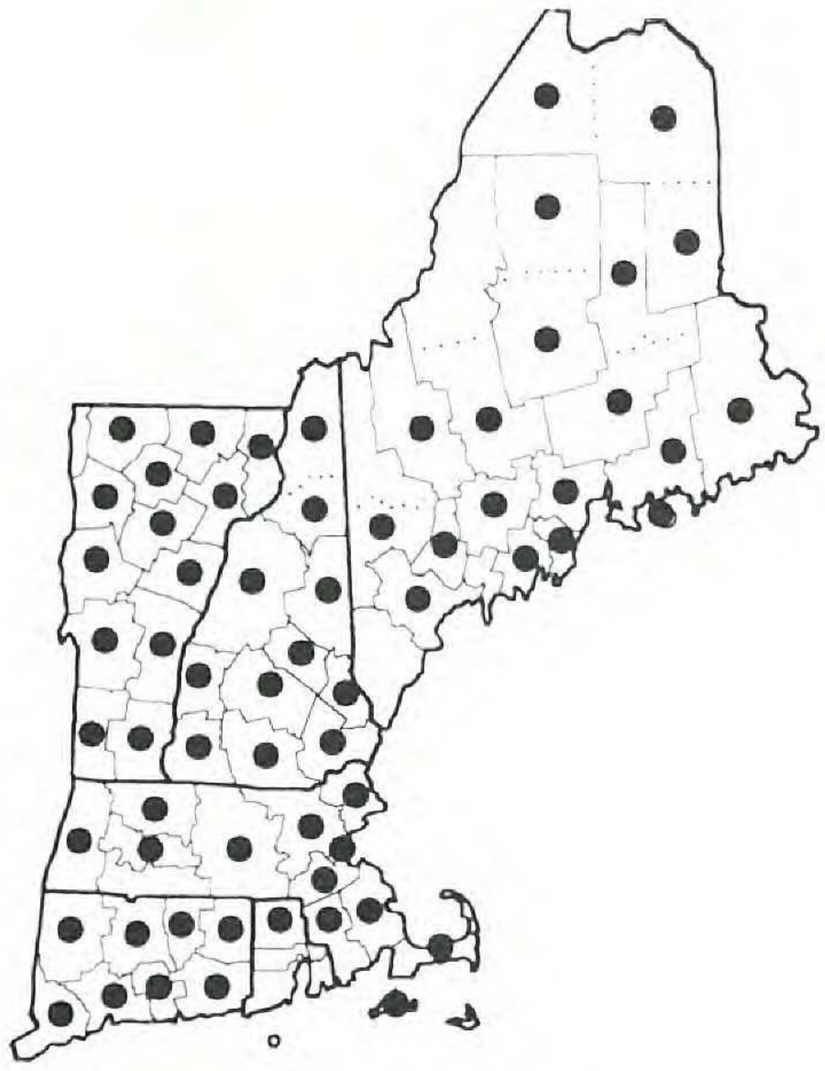
Listera cordata

Figure 54. Distribution maps for *Listera auriculata, L. australis, L. convallarioides,* and *L. cordata.*

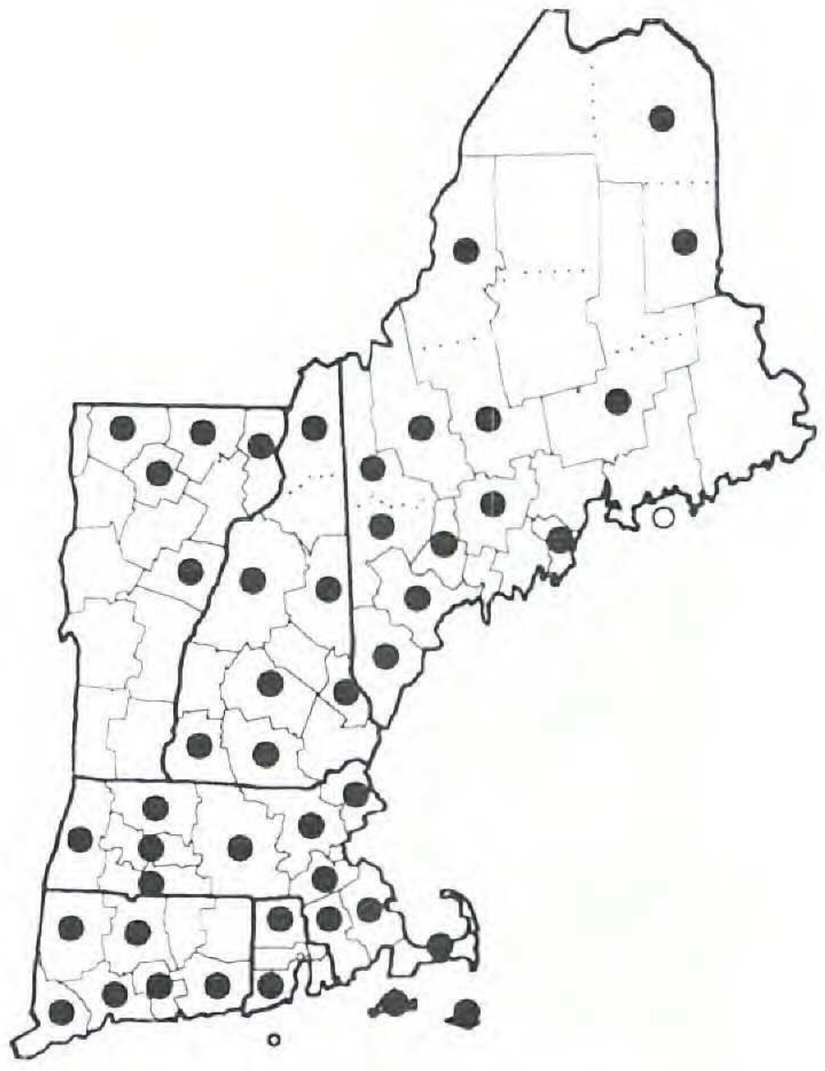
Malaxis bayardii



Malaxis monophyllos var. *brachypoda*



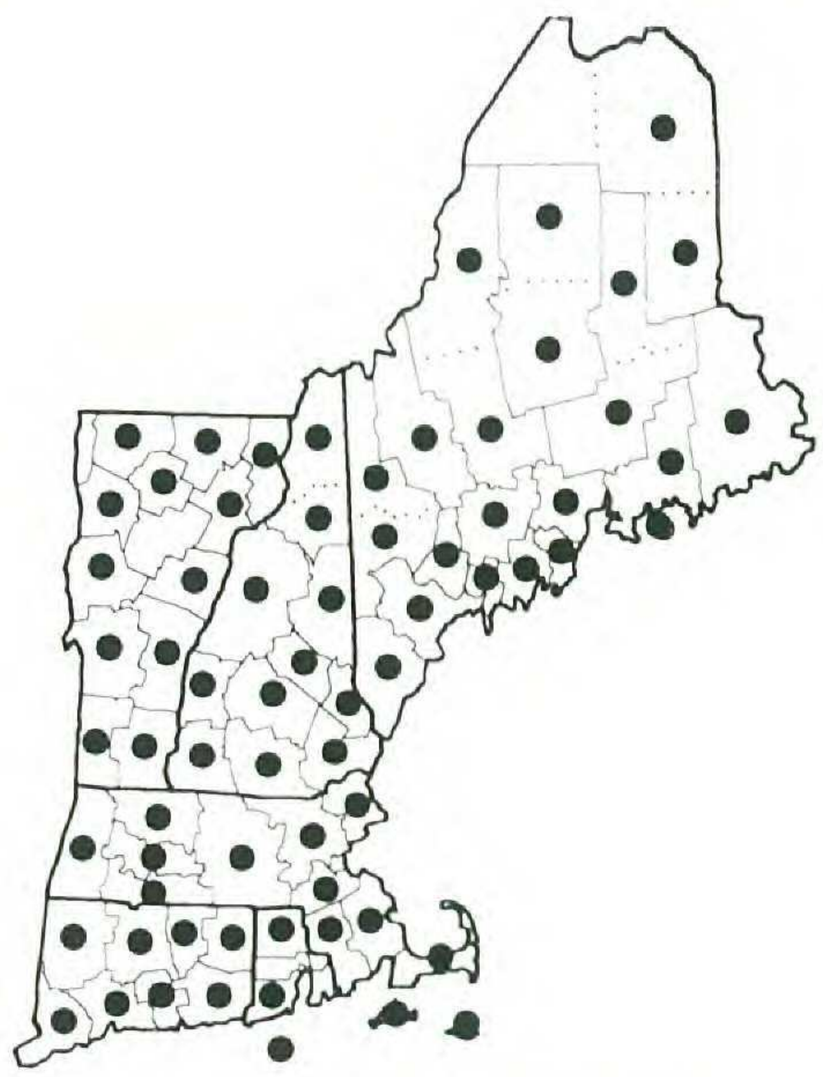
Malaxis unifolia



Platanthera blephariglottis var. *blephariglottis*

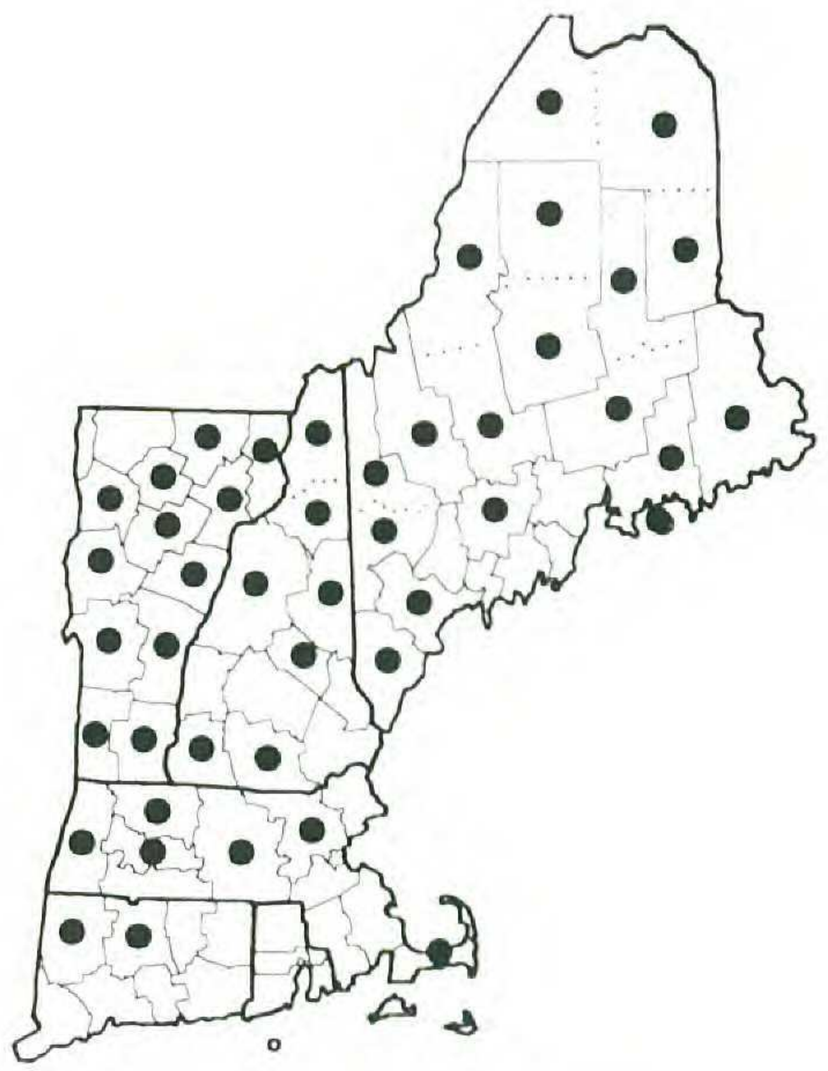
Figure 55. Distribution maps for *Malaxis bayardii, M. monophyllos* var. *brachypoda, M. unifolia,* and *Platanthera blephariglottis* var. *blephariglottis.*

Platanthera ciliaris



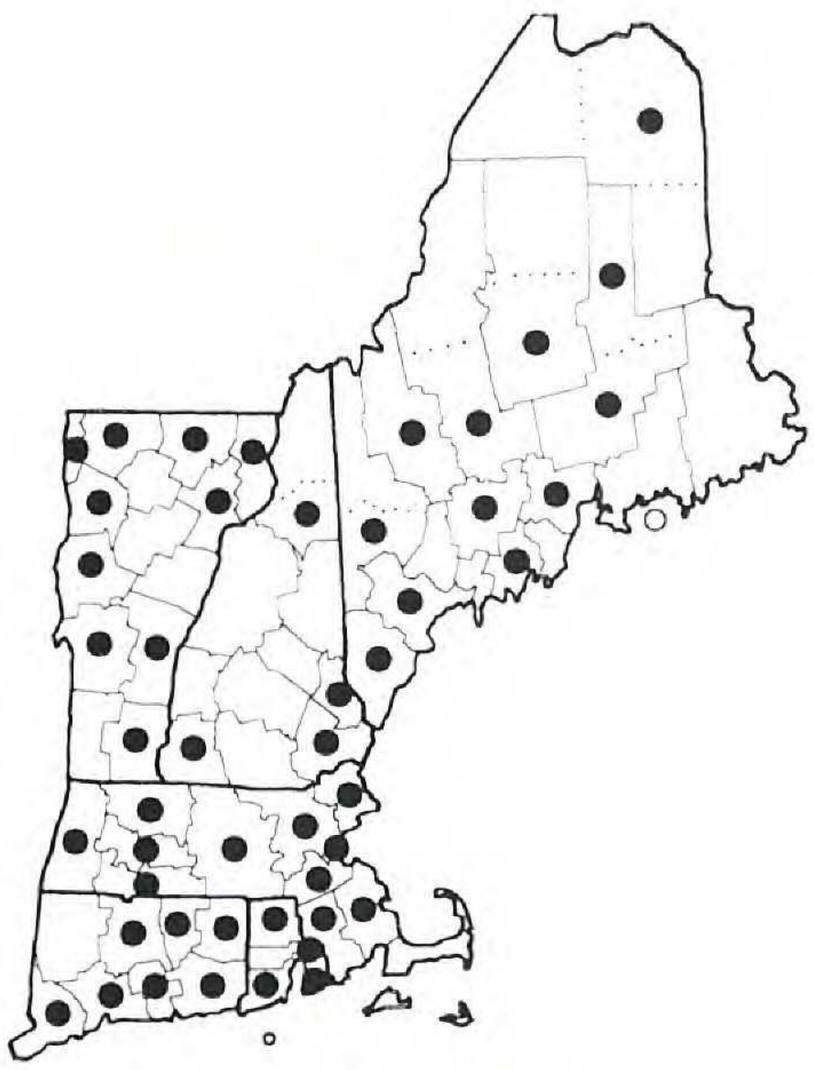
Platanthera clavellata

Platanthera cristata

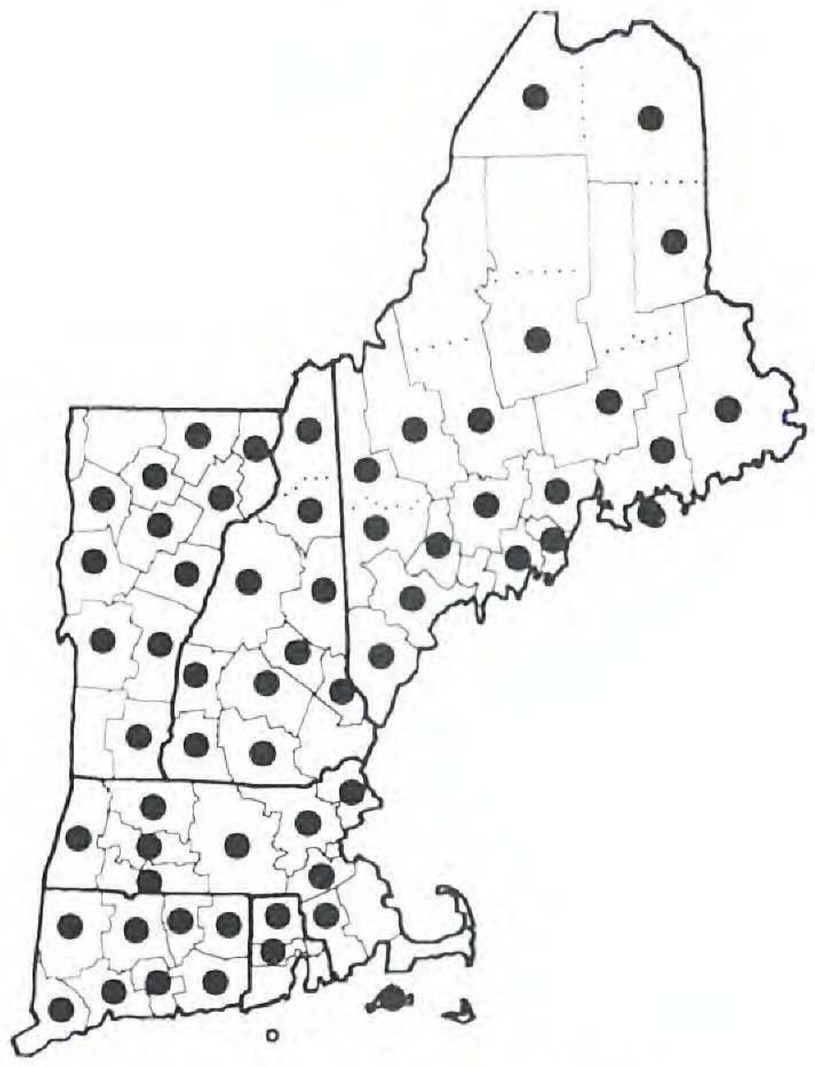


Platanthera dilatata
var. *dilatata*

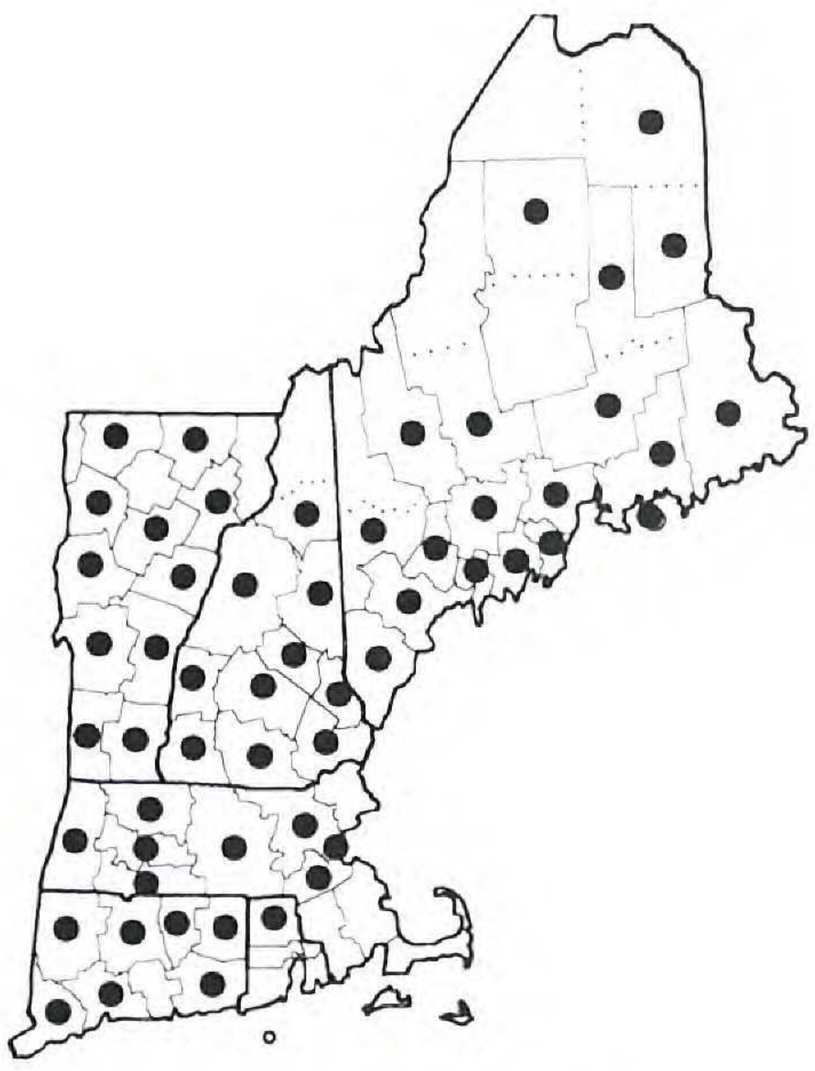
Figure 56. Distribution maps for *Platanthera ciliaris*, *P. clavellata*, *P. cristata*, and *P. dilatata* var. *dilatata*.



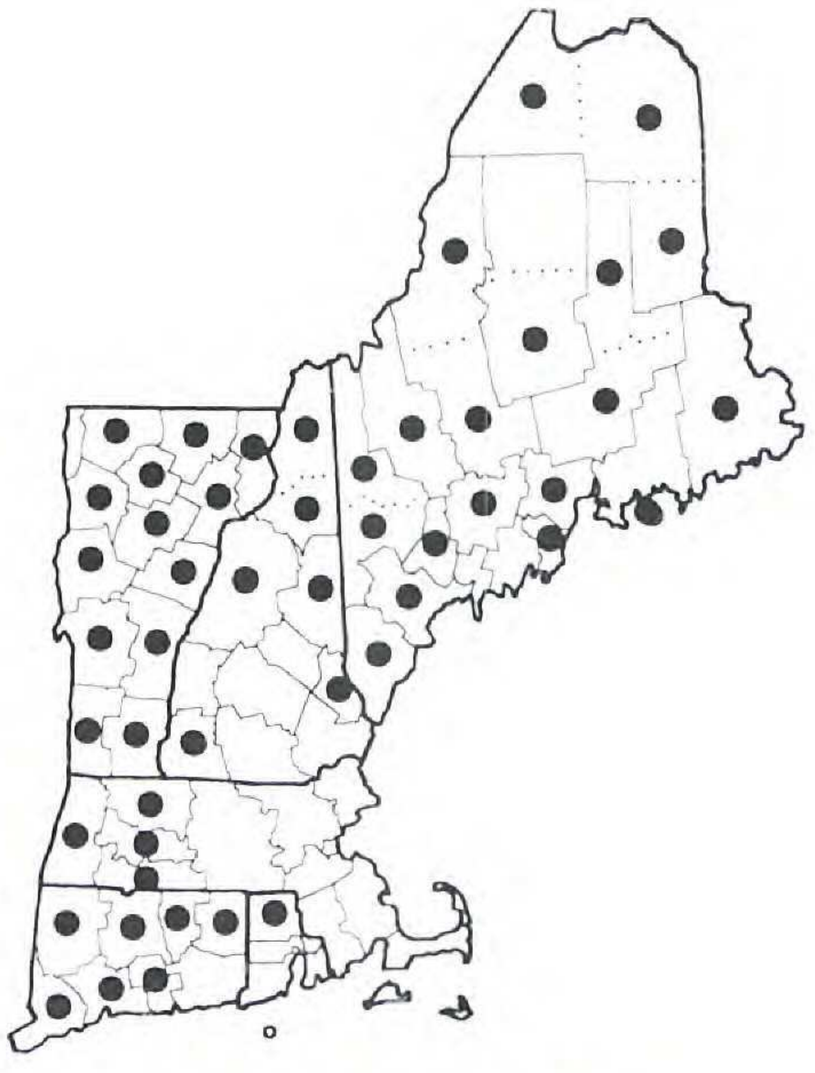
Platanthera flava
var. *herbiola*



Platanthera grandiflora

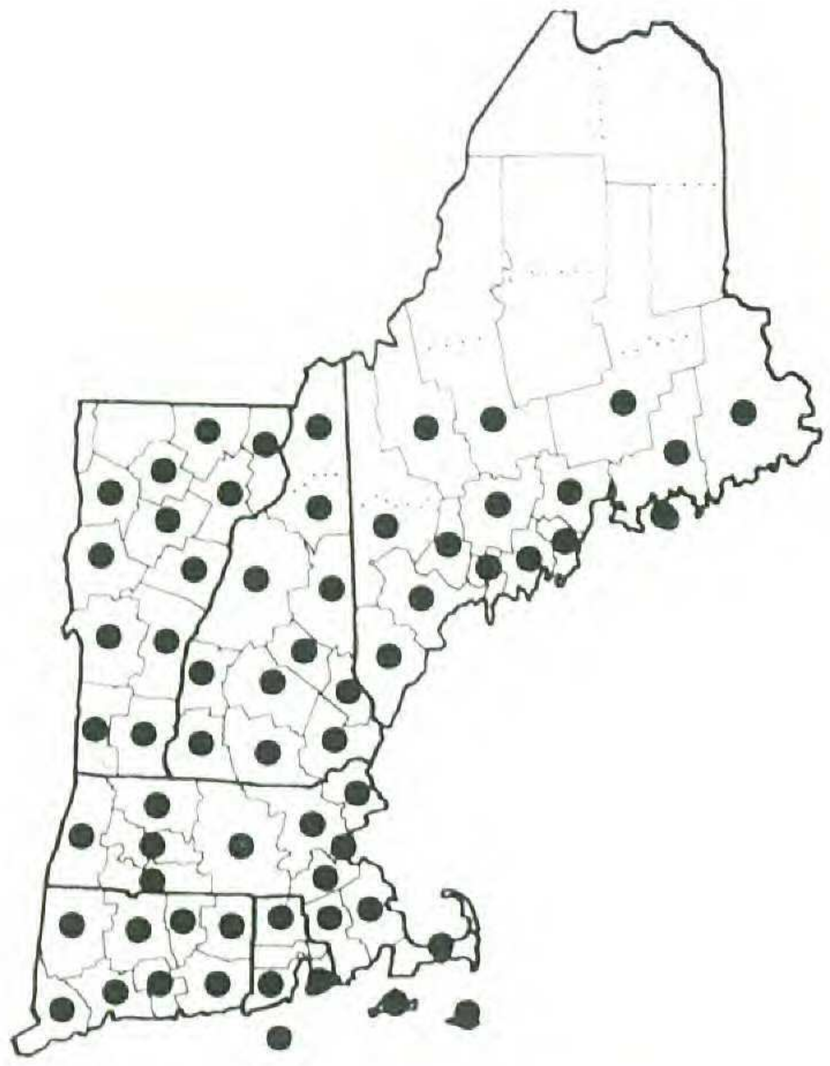


Platanthera hookeri



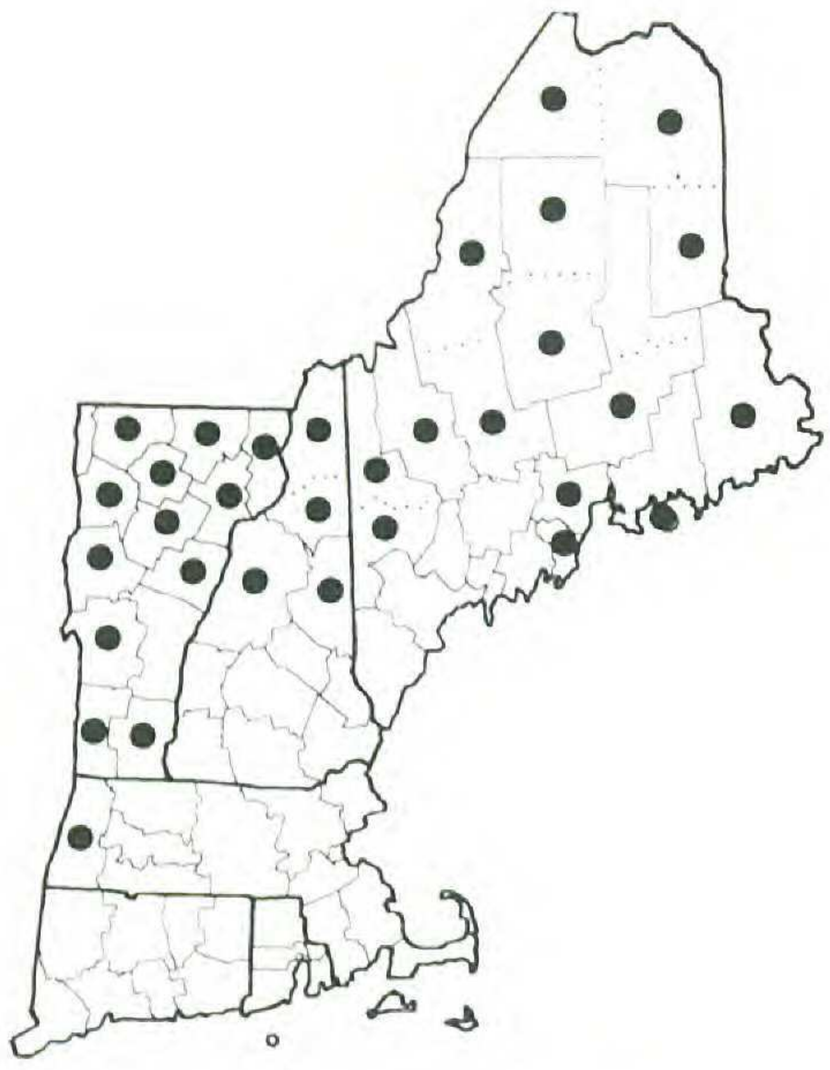
Platanthera hyperborea

Figure 57. Distribution maps for *Platanthera flava* var. *herbiola*, *P. grandiflora*, *P. hookeri*, and *P. hyperborea*.

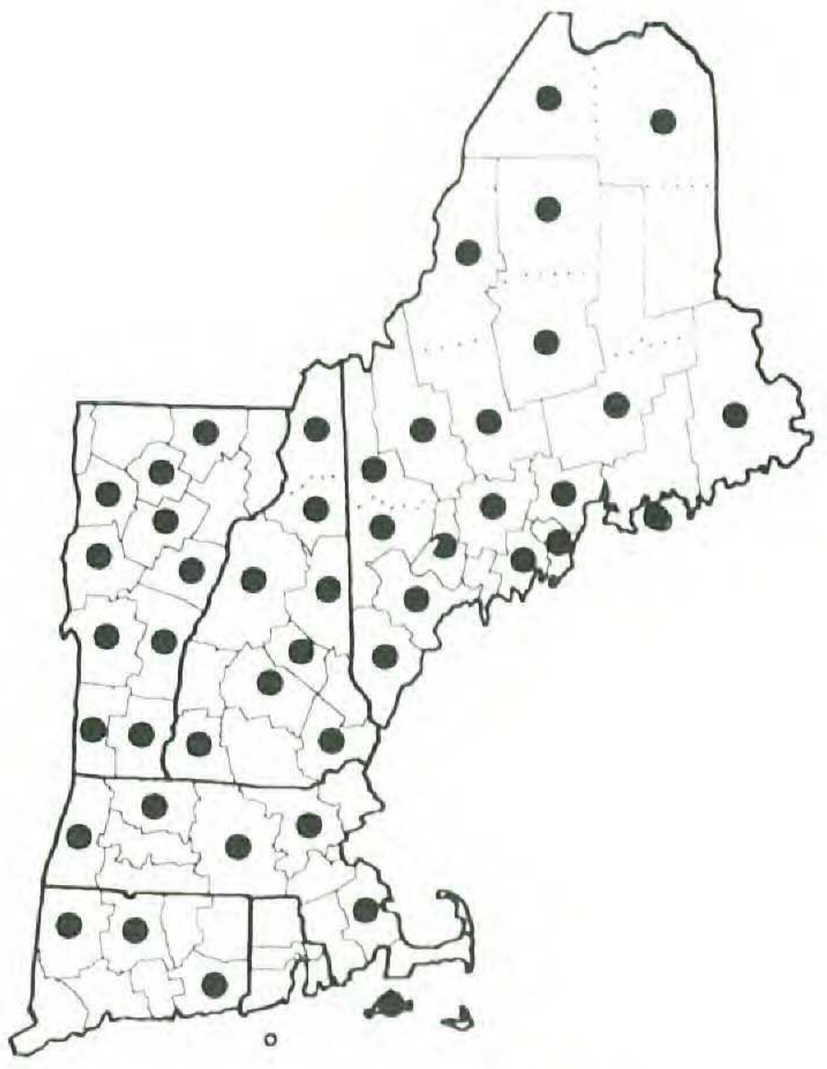


Platanthera lacera

Platanthera leucophaea

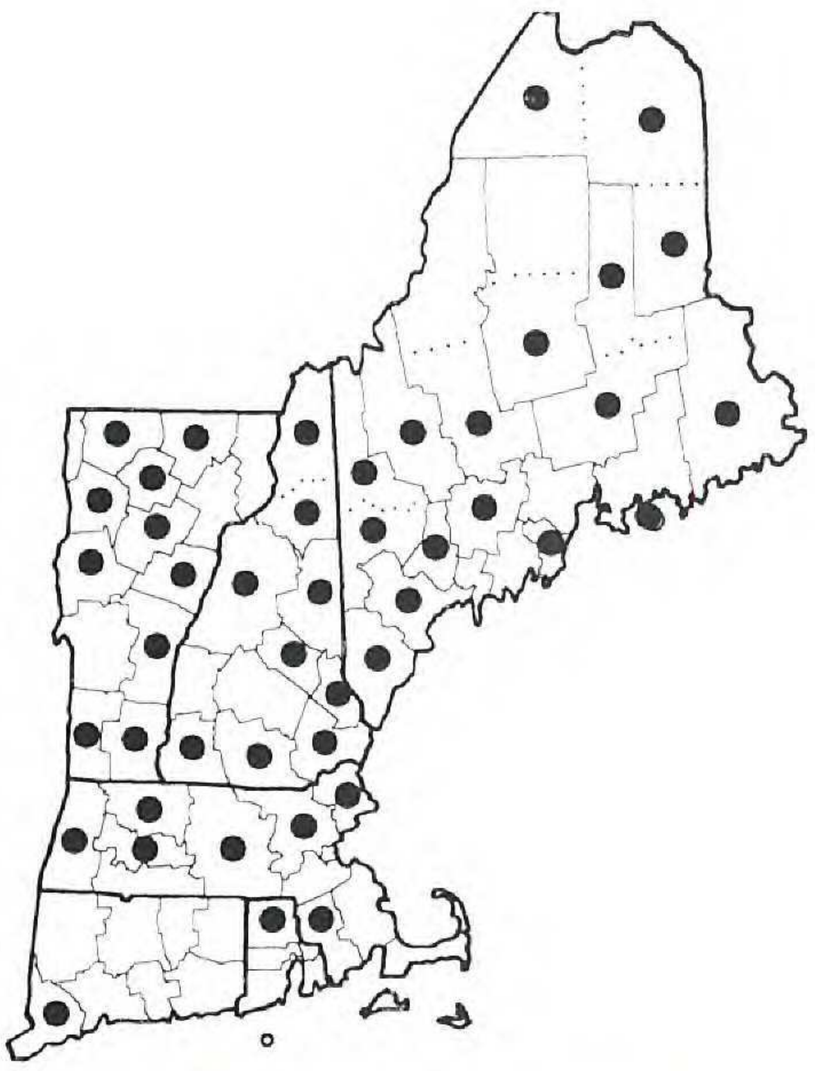


Platanthera obtusata

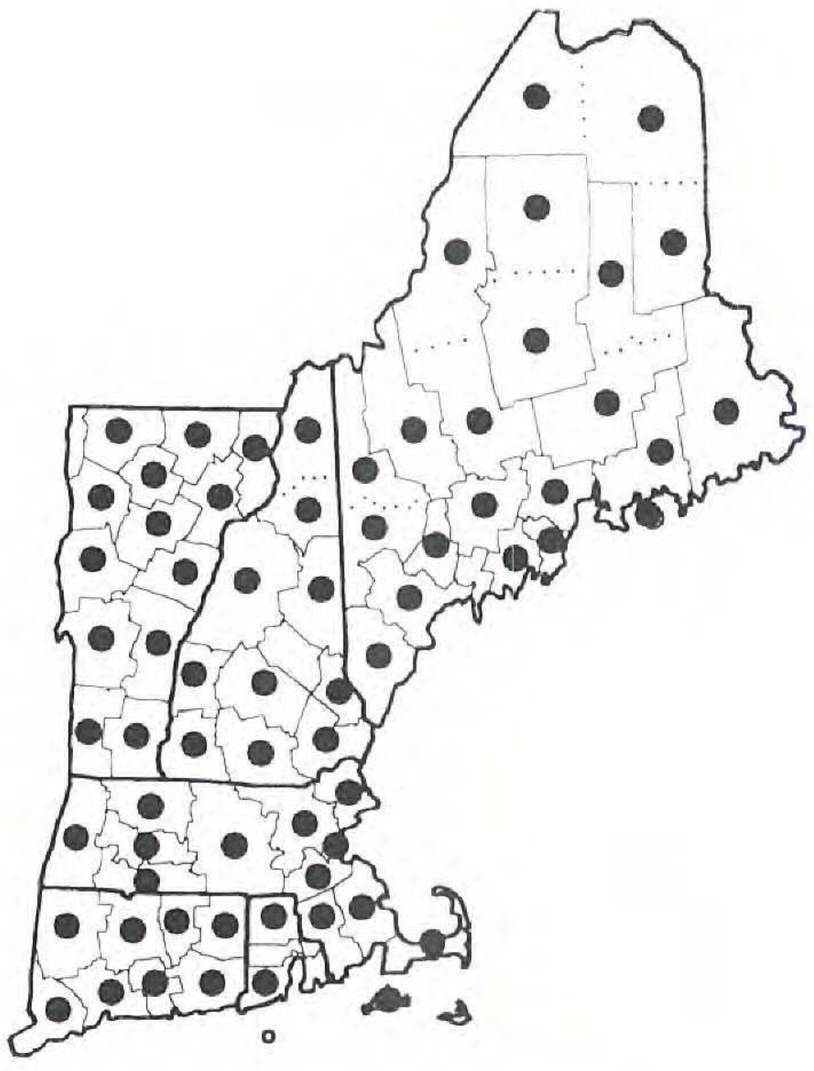


Platanthera orbiculata var. *orbiculata*

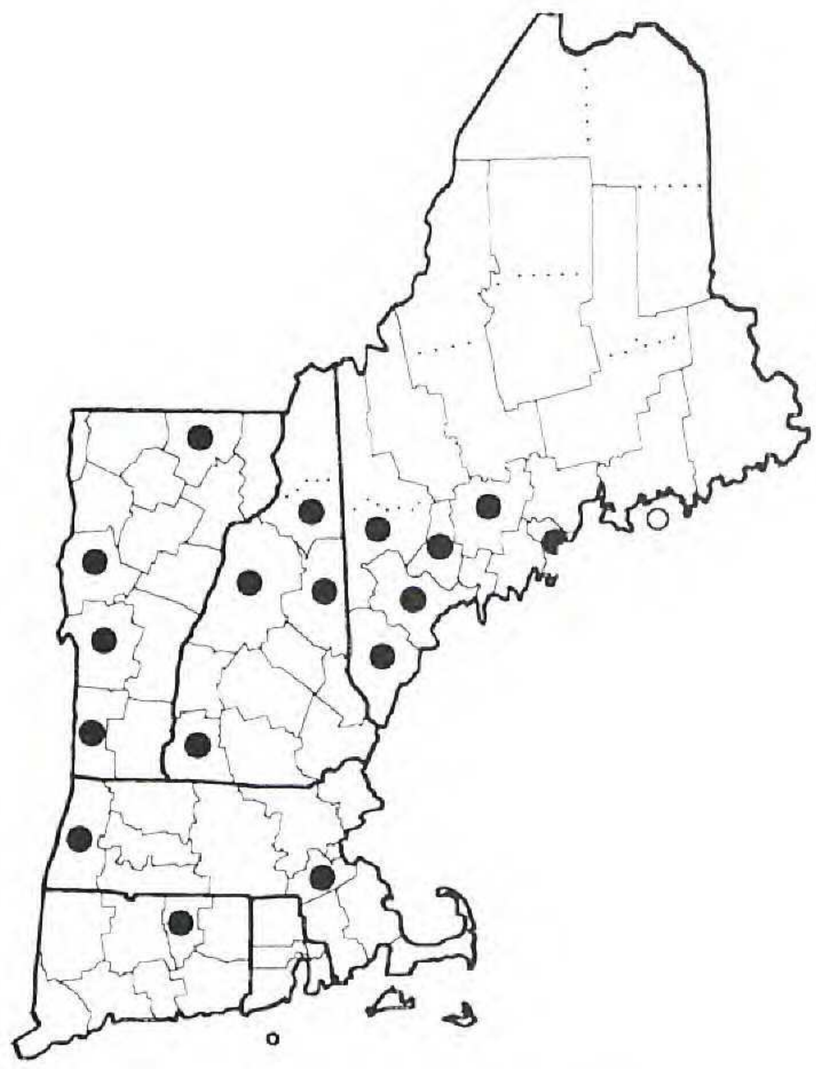
Figure 58. Distribution maps for *Platanthera lacera, P. leucophaea, P. obtusata,* and *P. orbiculata* var. *orbiculata.*



Platanthera orbiculata
var. *macrophylla*



Platanthera psycodes



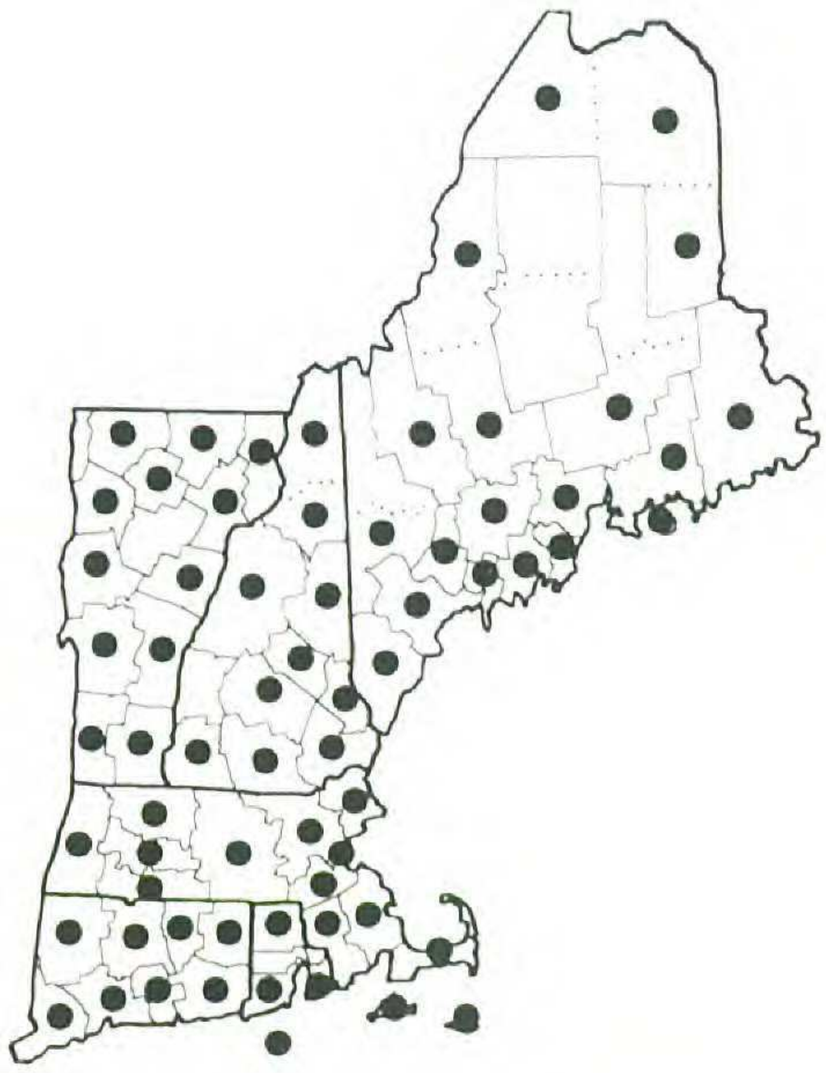
Platanthera X *andrewsii*

Platanthera grandiflora
X *P. hyperborea*

Figure 59. Distribution maps for *Platanthera orbiculata* var. *macrophylla*, *P. psycodes*, *P.* X *andrewsii*, and *P. grandiflora* X *P. hyperborea*.

Platanthera grandiflora X *P. lacera*

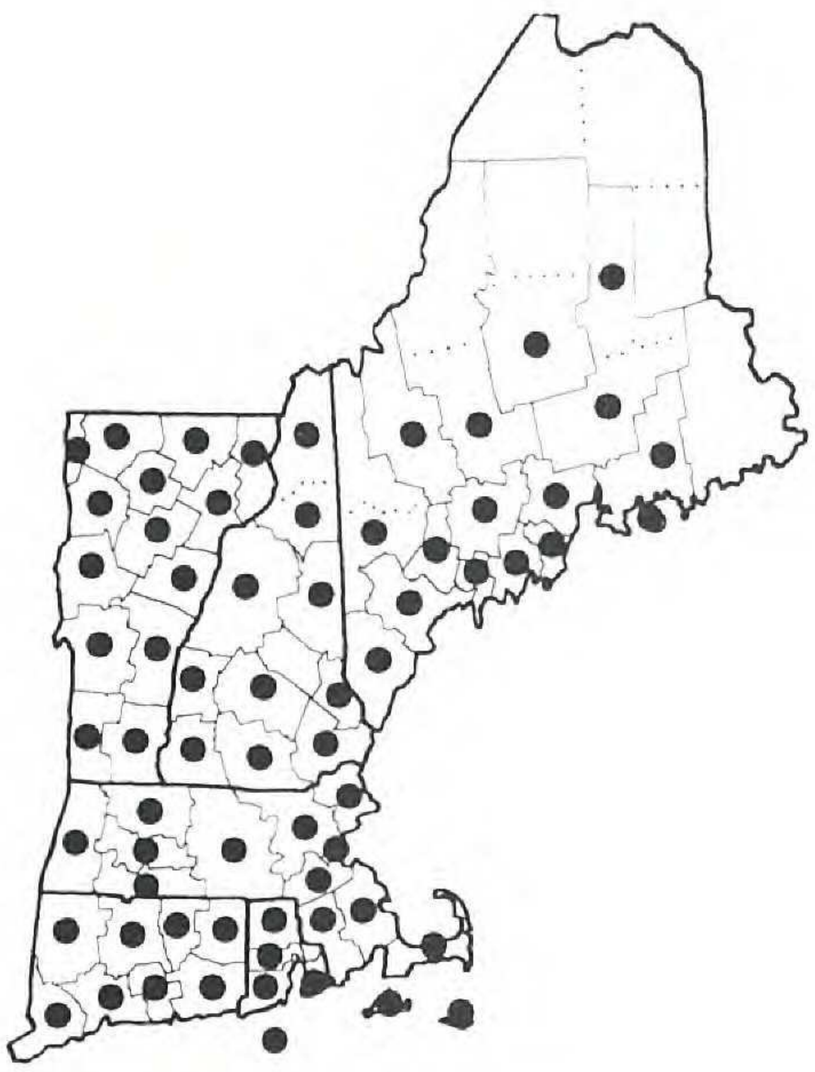
Platanthera X *media*



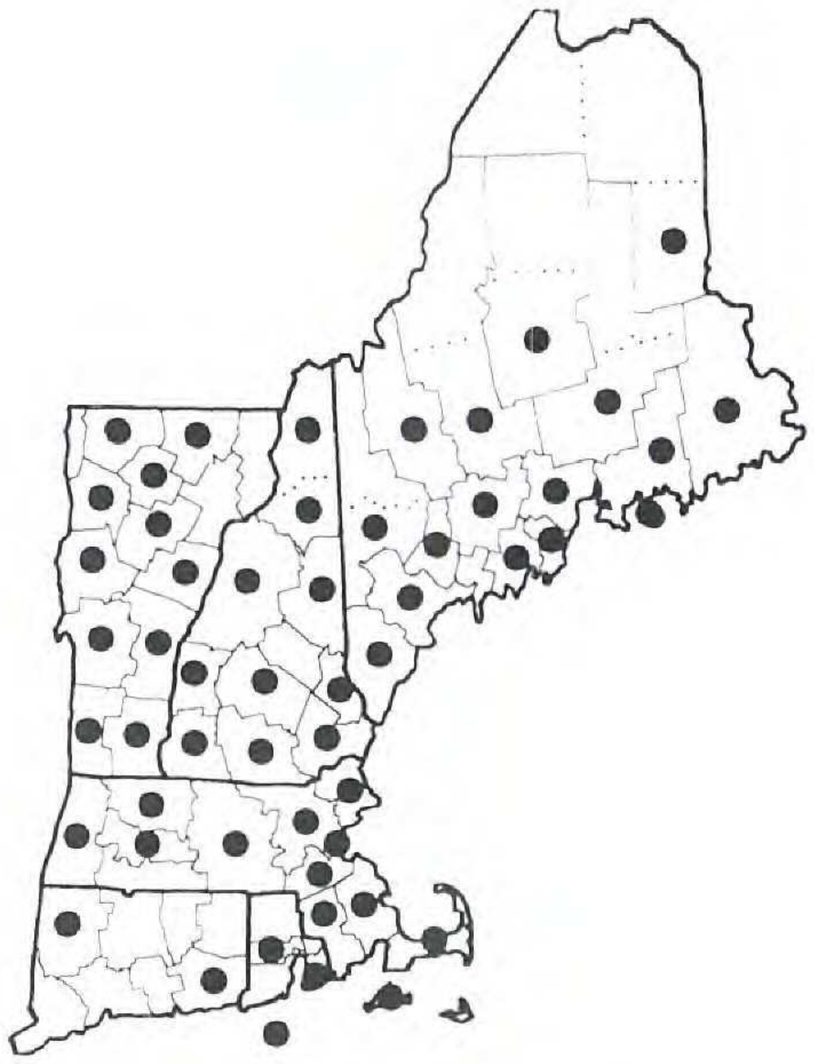
Pogonia ophioglossoides

Spiranthes casei

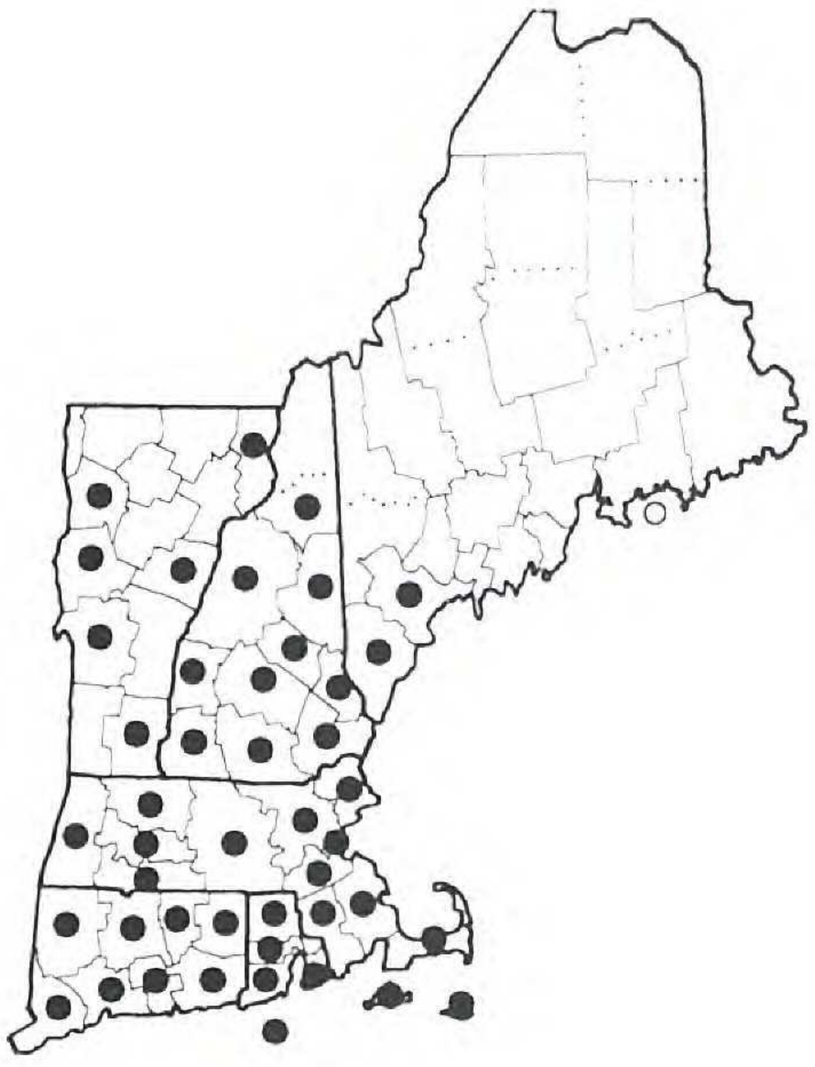
Figure 60. Distribution maps for *Platanthera grandiflora* X *P. lacera*, *P.* X *media*, *Pogonia ophioglossoides*, and *Spiranthes casei*.



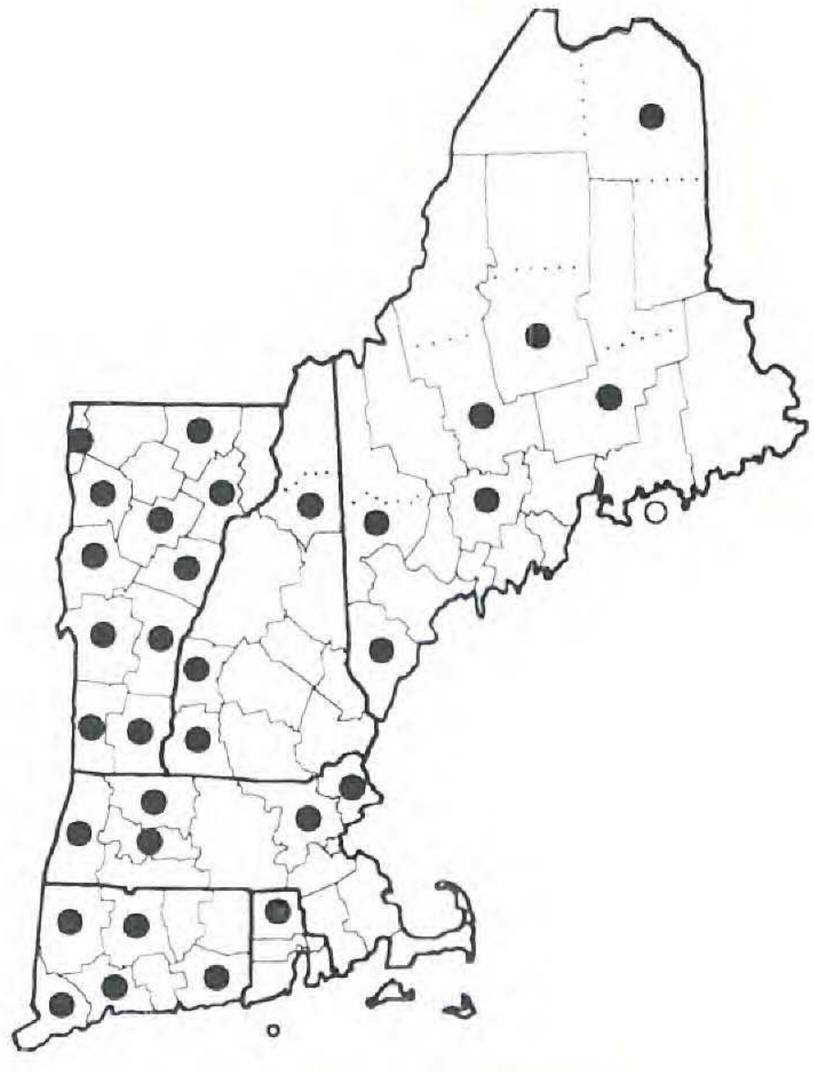
Spiranthes cernua



Spiranthes lacera
var. *lacera*

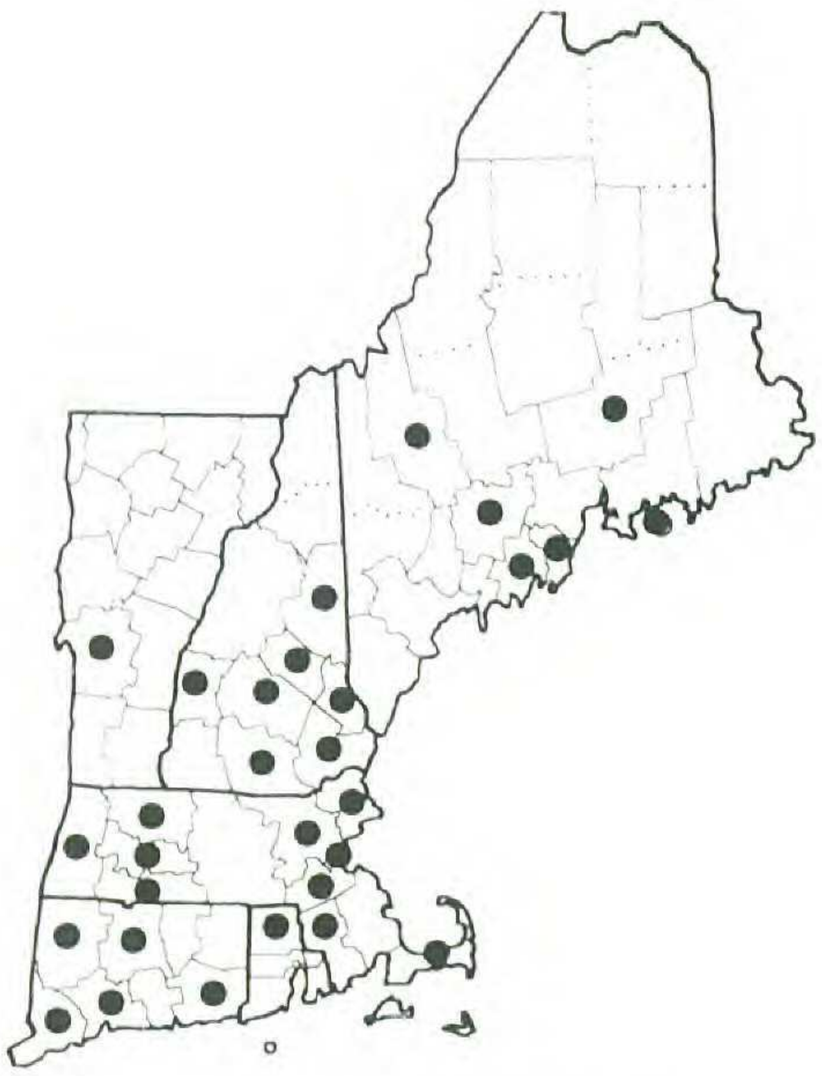


Spiranthes lacera
var. *gracilis*

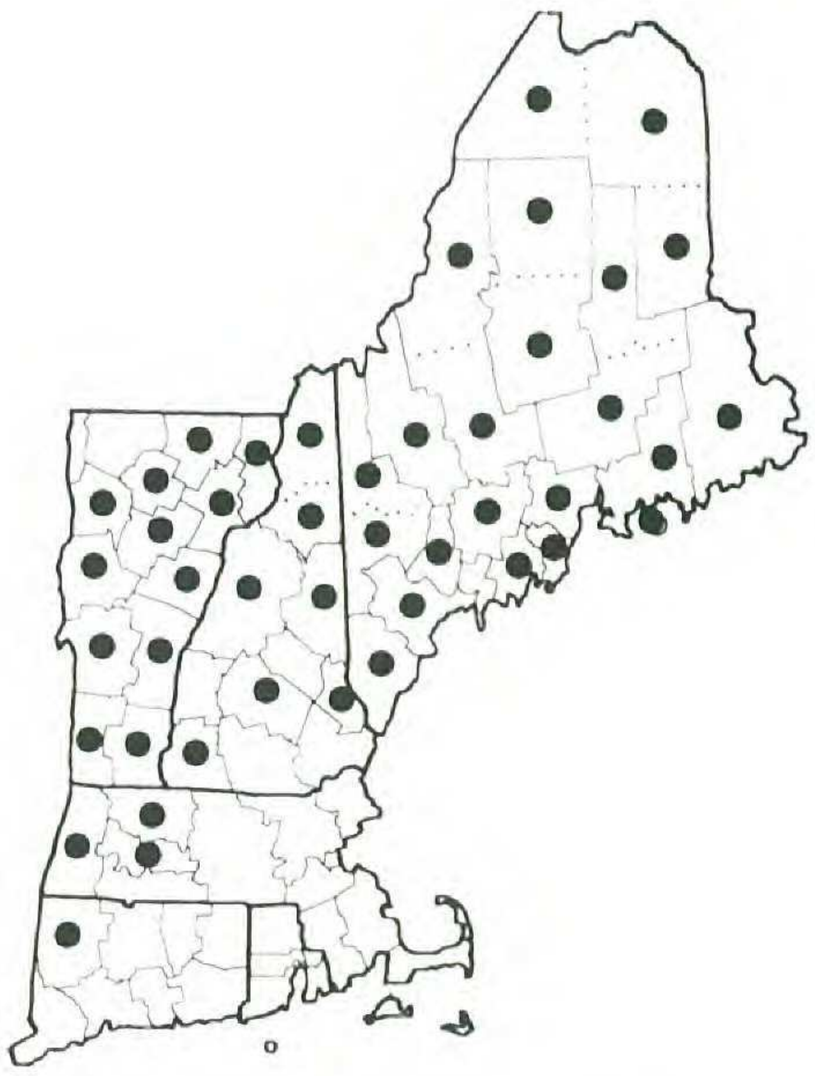


Spiranthes lucida

Figure 61. Distribution maps for *Spiranthes cernua, S. lacera* var. *lacera, S. lacera* var. *gracilis,* and *S. lucida.*



Spiranthes ochroleuca



Spiranthes romanzoffiana

Spiranthes tuberosa

Spiranthes vernalis

Figure 62. Distribution maps for *Spiranthes ochroleuca*, *S. romanzoffiana*, *S. tuberosa*, and *S. vernalis*.

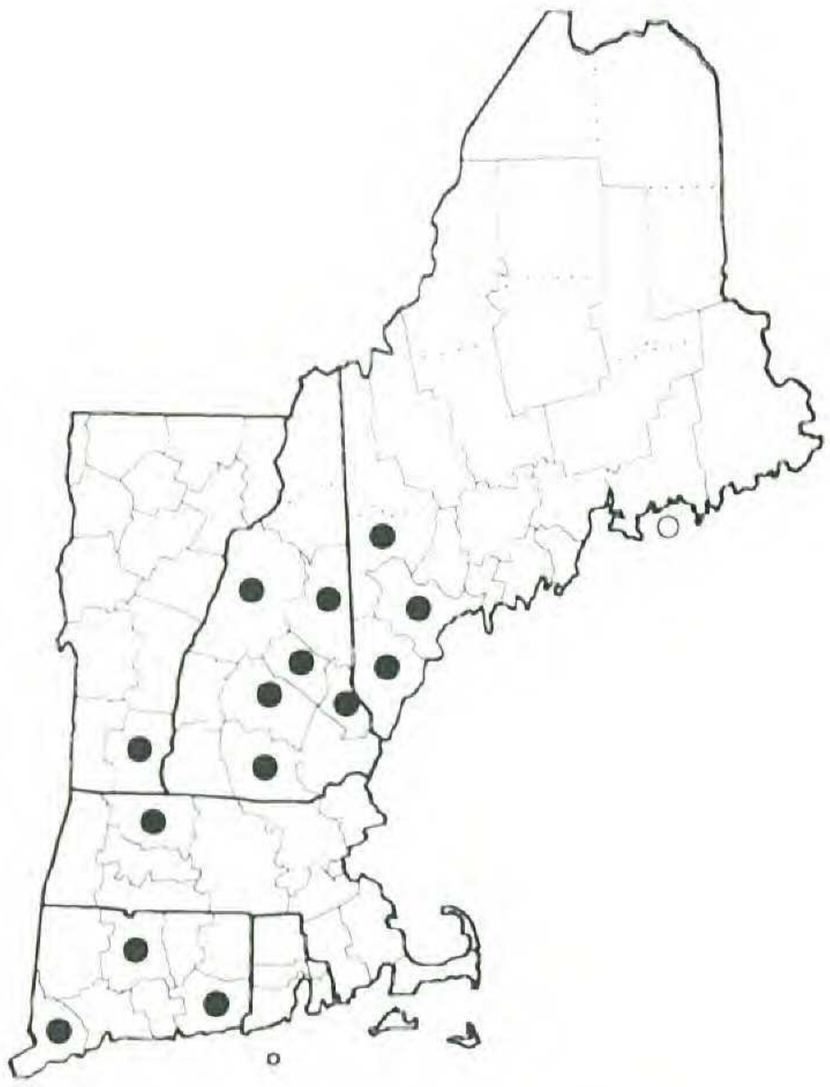
Spiranthes X *intermedia*

Spiranthes lacera var. *lacera* X *S. romanzoffiana*

Spiranthes lacera var. *gracilis* X *S. tuberosa*

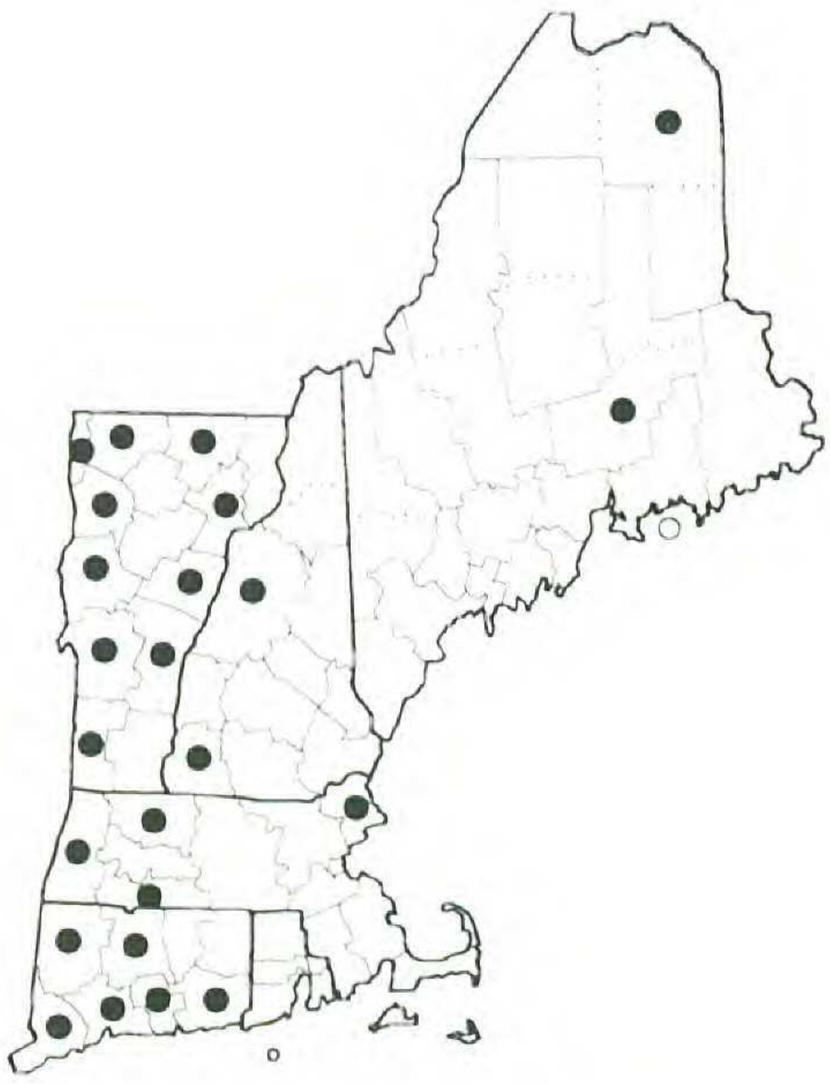
Tipularia discolor

Figure 63. Distribution maps for *Spiranthes* X *intermedia, S. lacera* var. *lacera* X *S. romanzoffiana, S. lacera* var. *gracilis* X *S. tuberosa,* and *Tipularia discolor.*



Triphora trianthophora
subsp. *trianthophora*

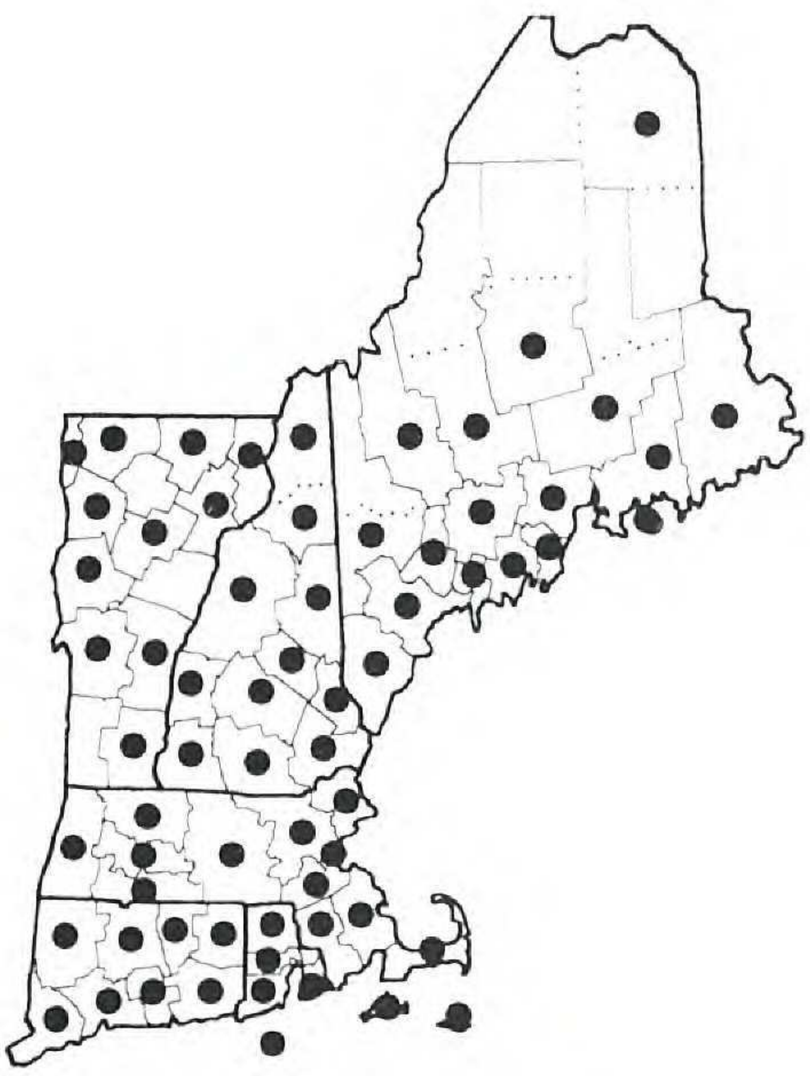
EICHHORNIA CRASSIPES



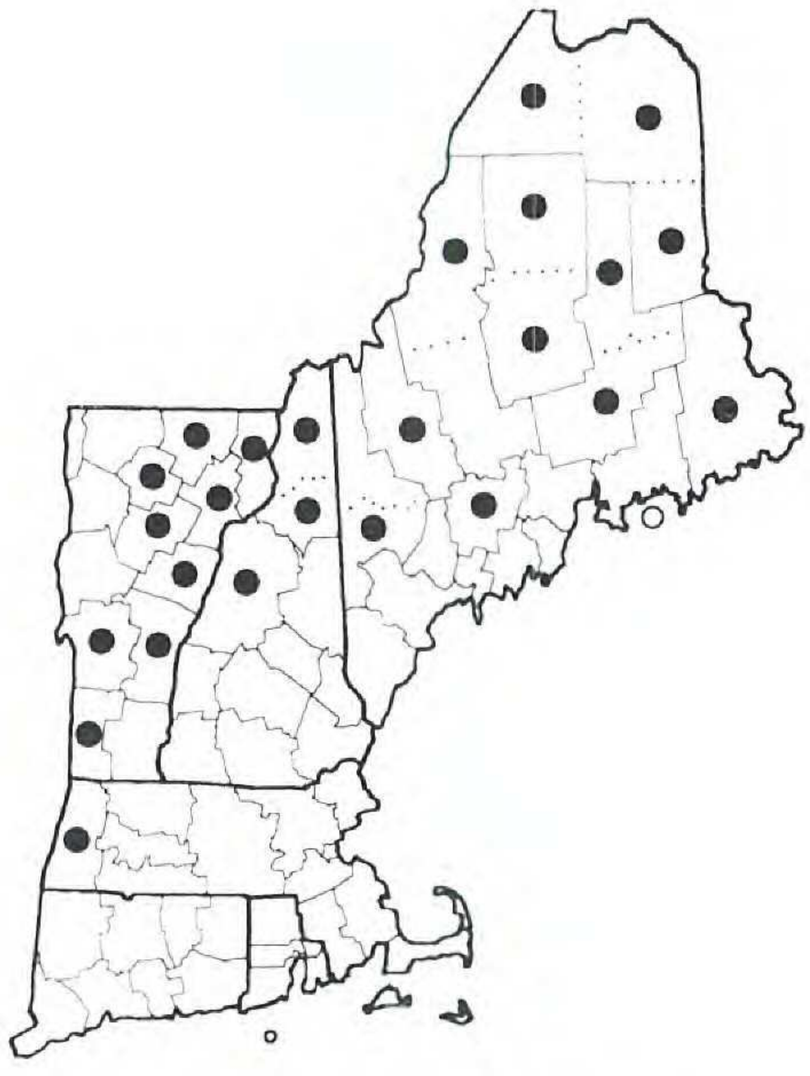
Heteranthera dubia

Heteranthera reniformis

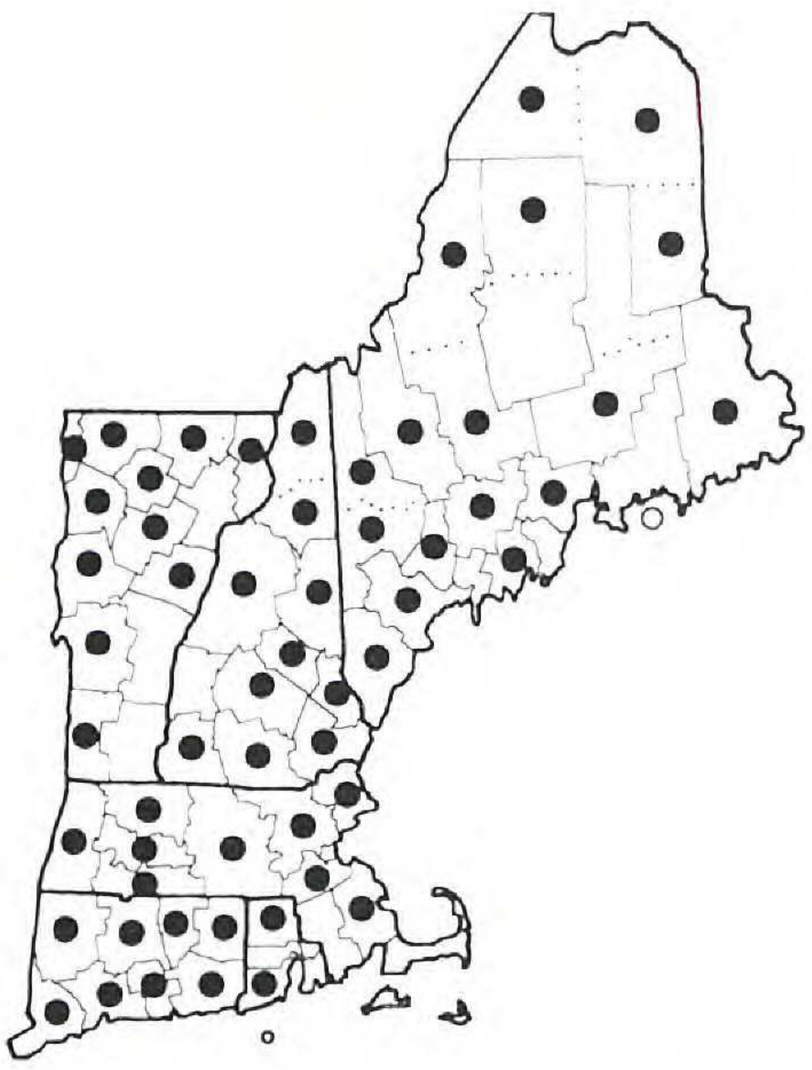
Figure 64. Distribution maps for *Triphora trianthophora* subsp. *trianthophora*, *EICHHORNIA CRASSIPES*, *Heteranthera dubia*, and *H. reniformis*.



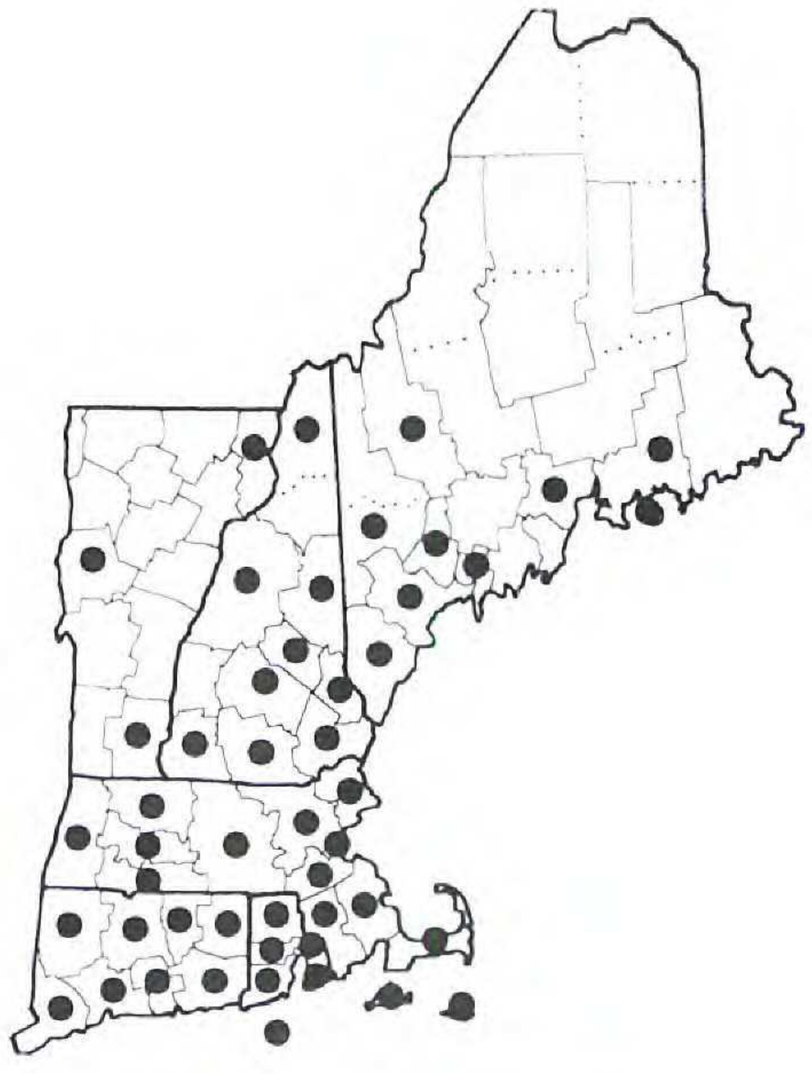
Pontederia cordata



Potamogeton alpinus

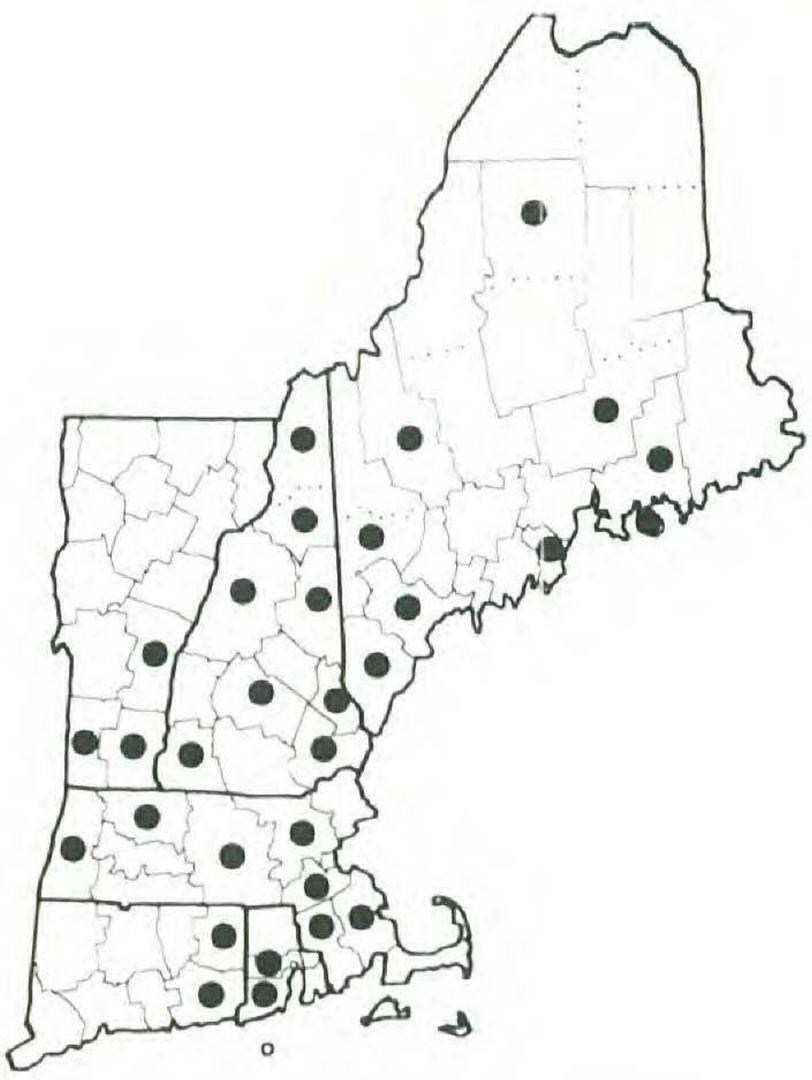


Potamogeton amplifolius

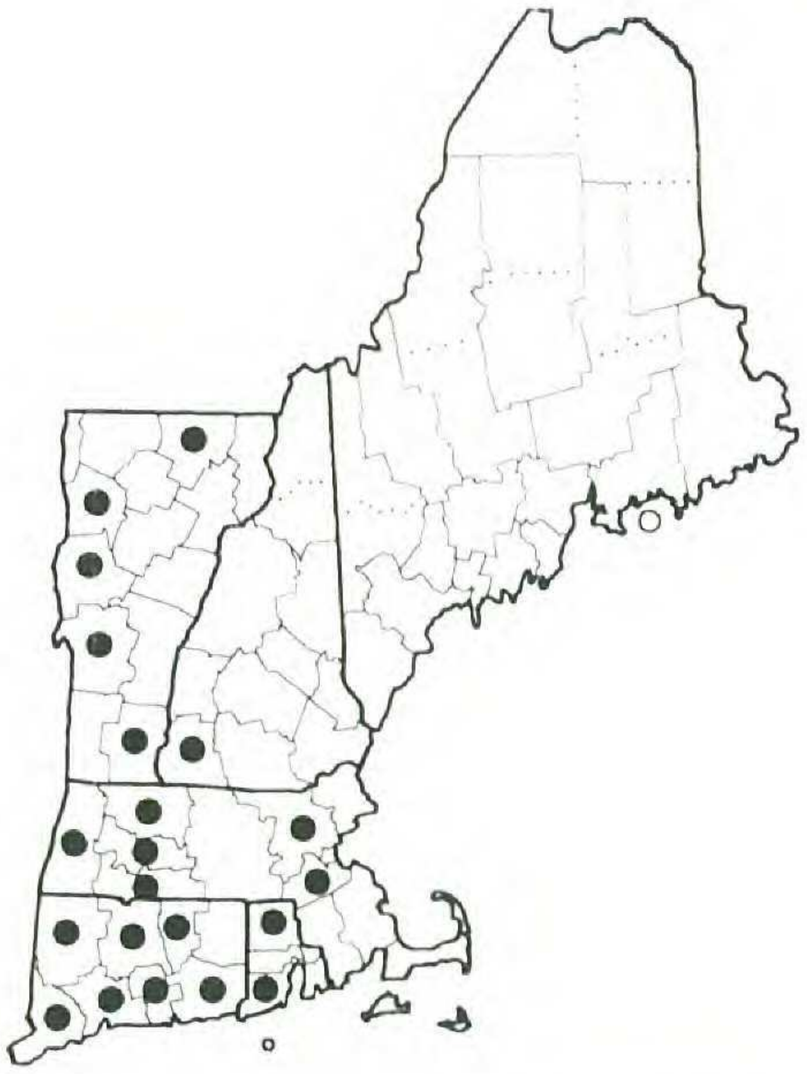


Potamogeton bicupulatus

Figure 65. Distribution maps for *Pontederia cordata, Potamogeton alpinus, P. amplifolius,* and *P. bicupulatus.*

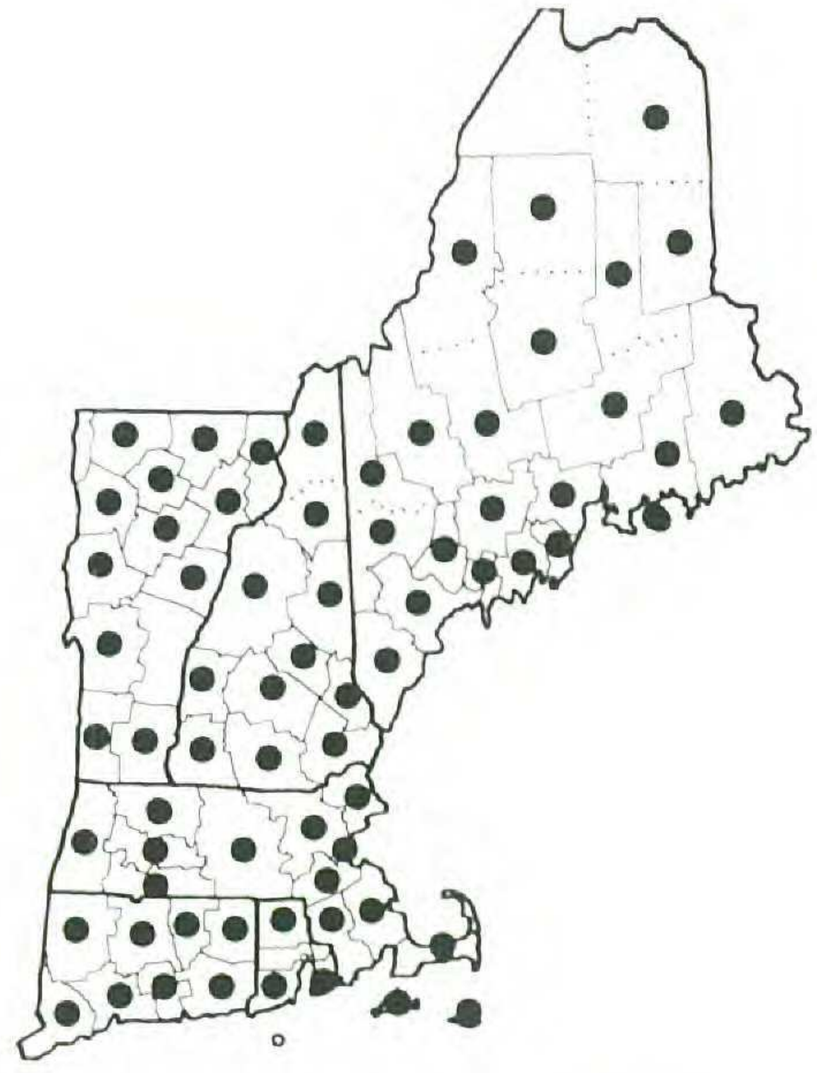


Potamogeton confervoides



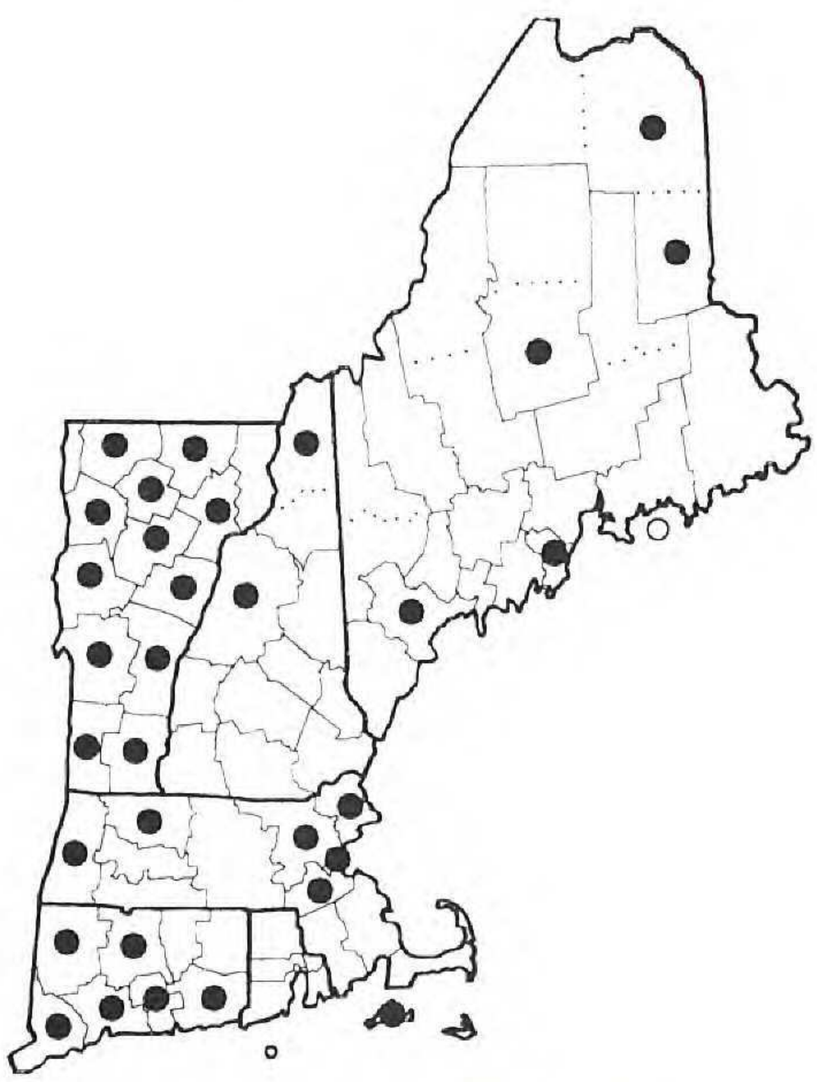
POTAMOGETON CRISPUS

Potamogeton diversifolius



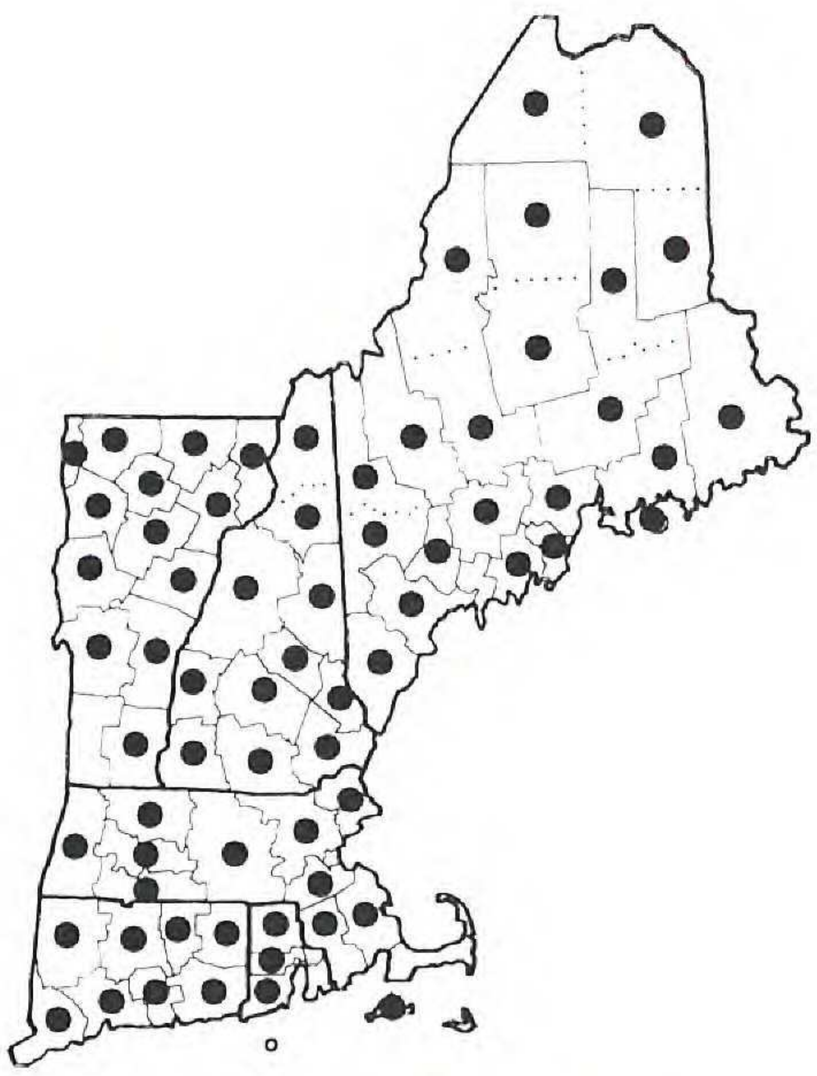
Potamogeton epihydrus

Figure 66. Distribution maps for *Potamogeton confervoides, P. CRISPUS, P. diversifolius,* and *P. epihydrus.*

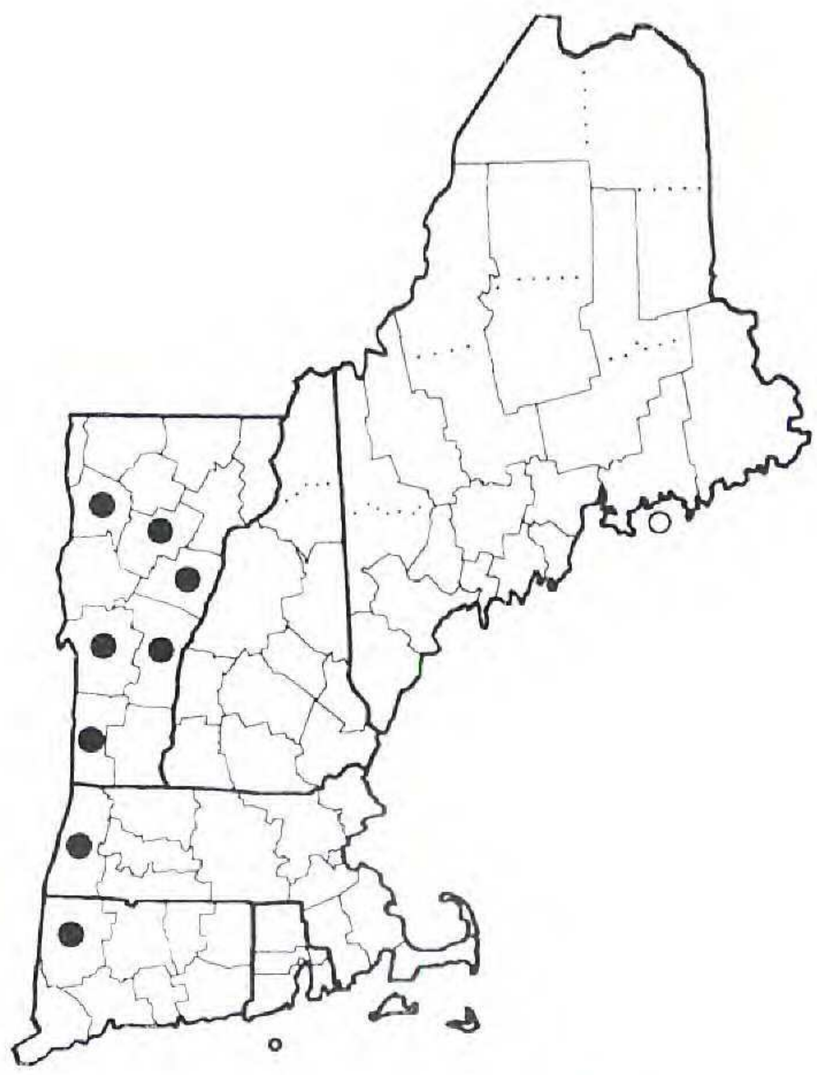


Potamogeton foliosus
subsp. *foliosus*

Potamogeton friesii

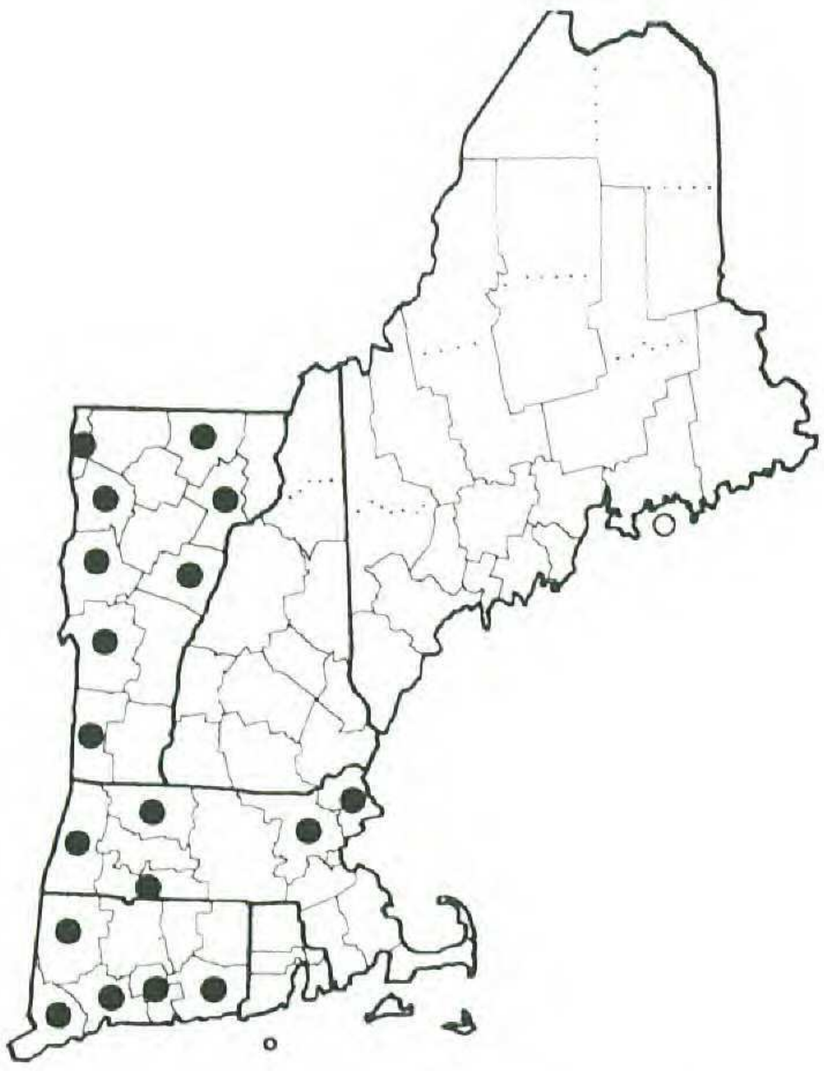


Potamogeton gramineus

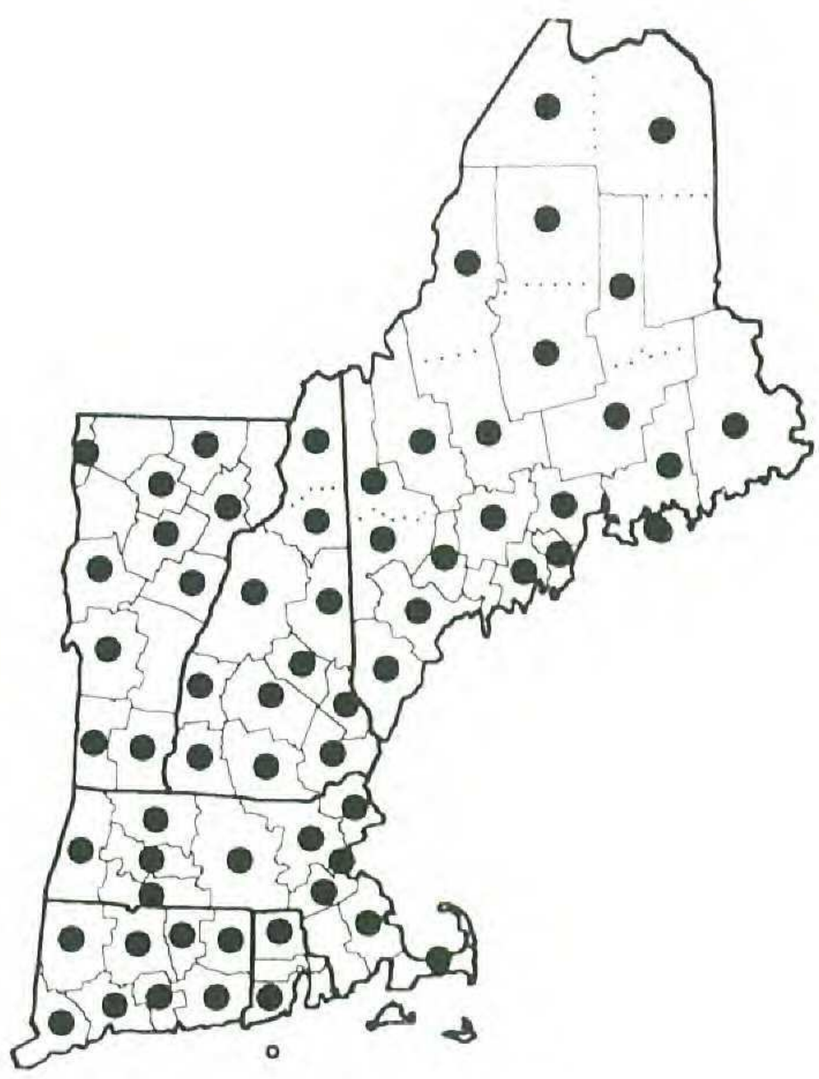


Potamogeton hillii

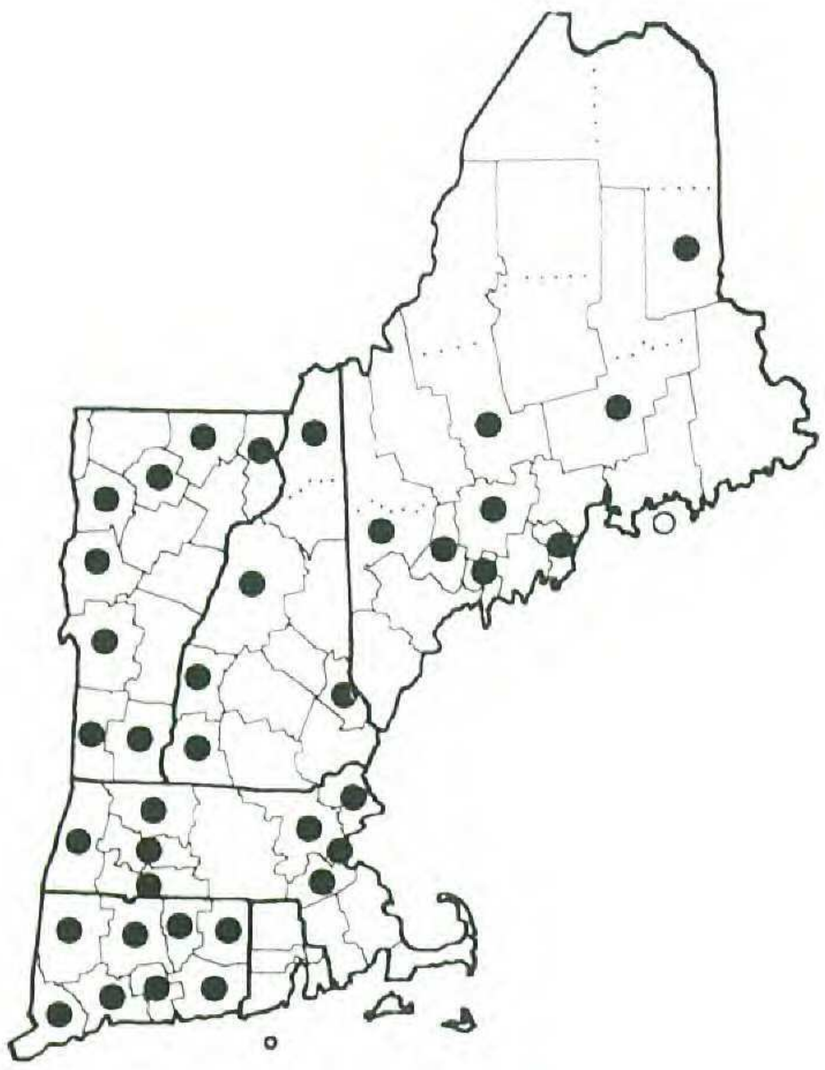
Figure 67. Distribution maps for *Potamogeton foliosus* subsp. *foliosus*, *P. friesii*, *P. gramineus*, and *P. hillii*.



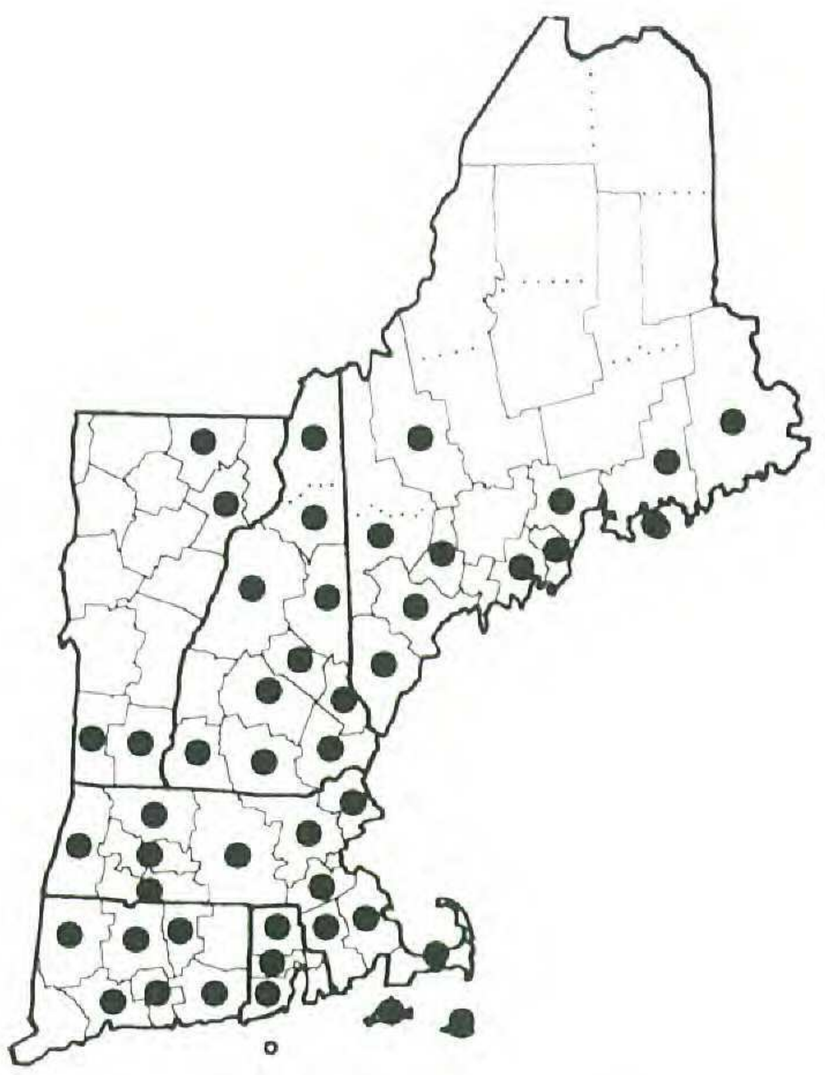
Potamogeton illinoensis



Potamogeton natans

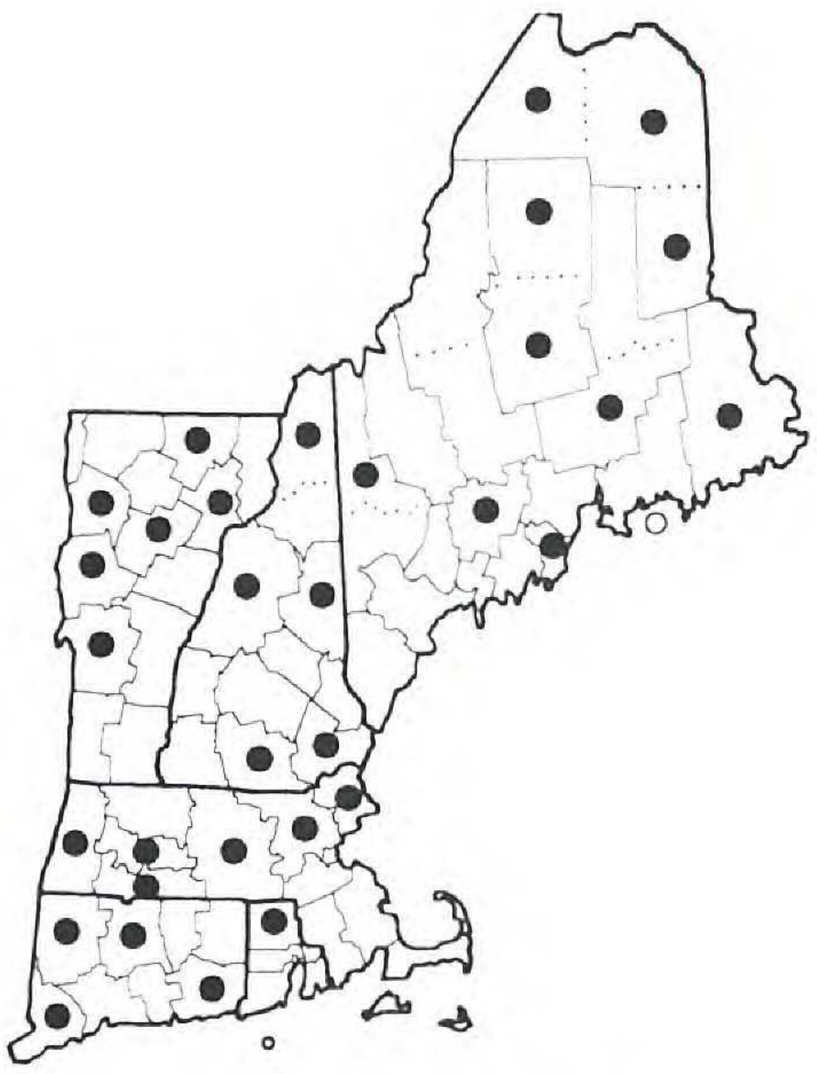


Potamogeton nodosus



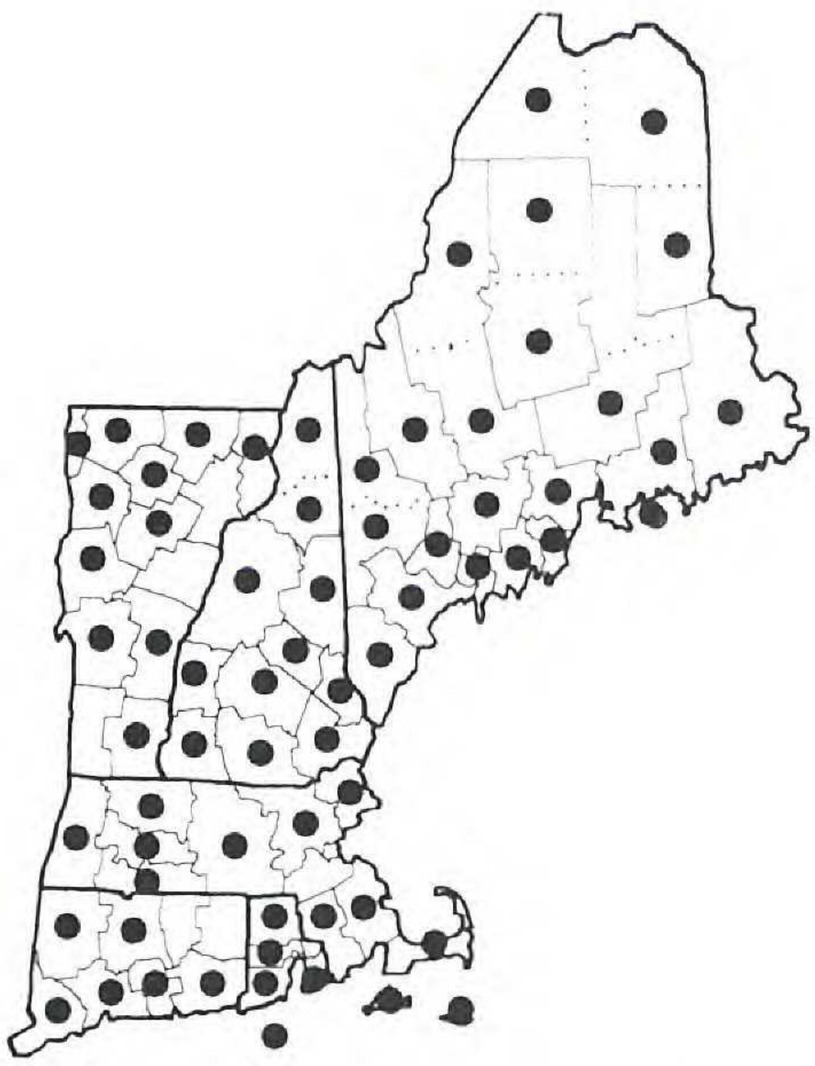
Potamogeton oakesianus

Figure 68. Distribution maps for *Potamogeton illinoensis, P. natans, P. nodosus,* and *P. oakesianus.*

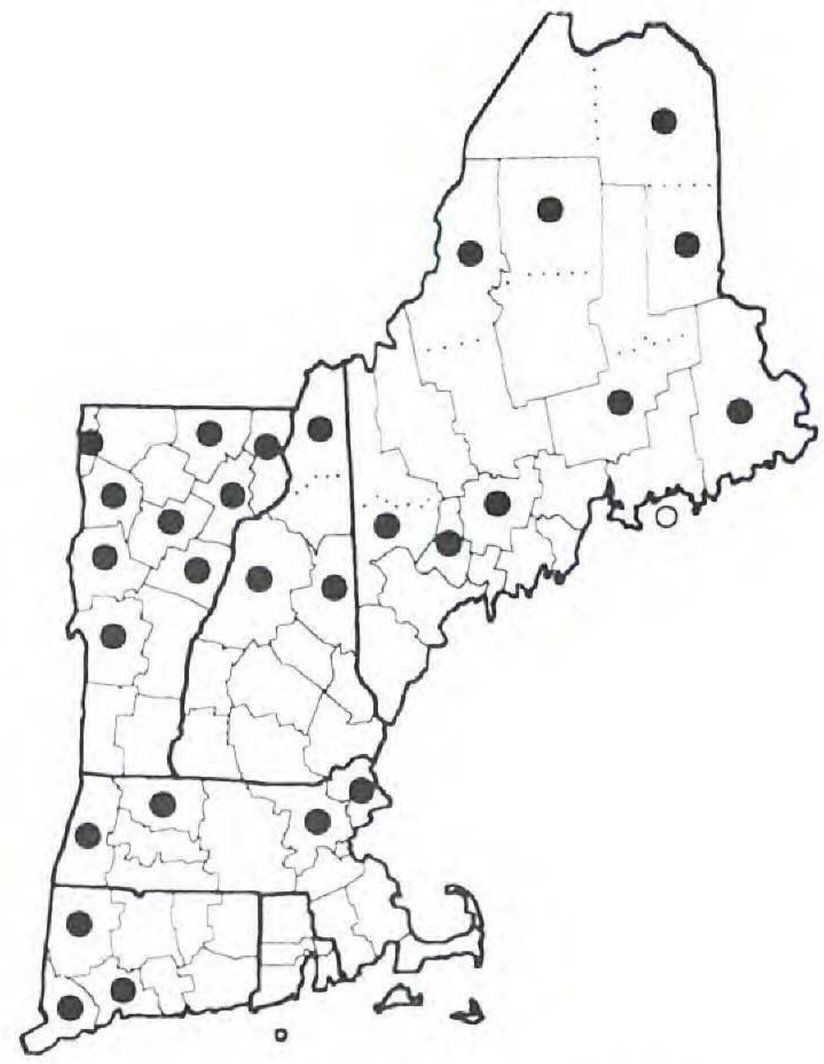


Potamogeton obtusifolius

Potamogeton ogdenii

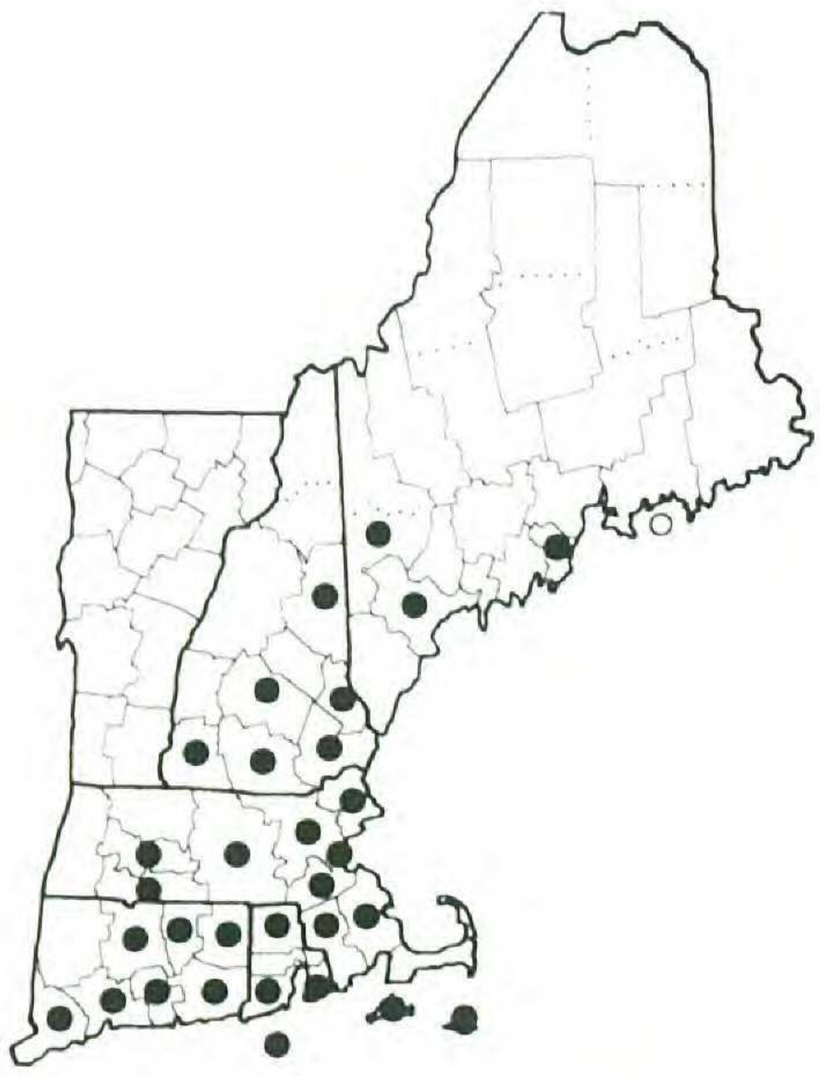


Potamogeton perfoliatus

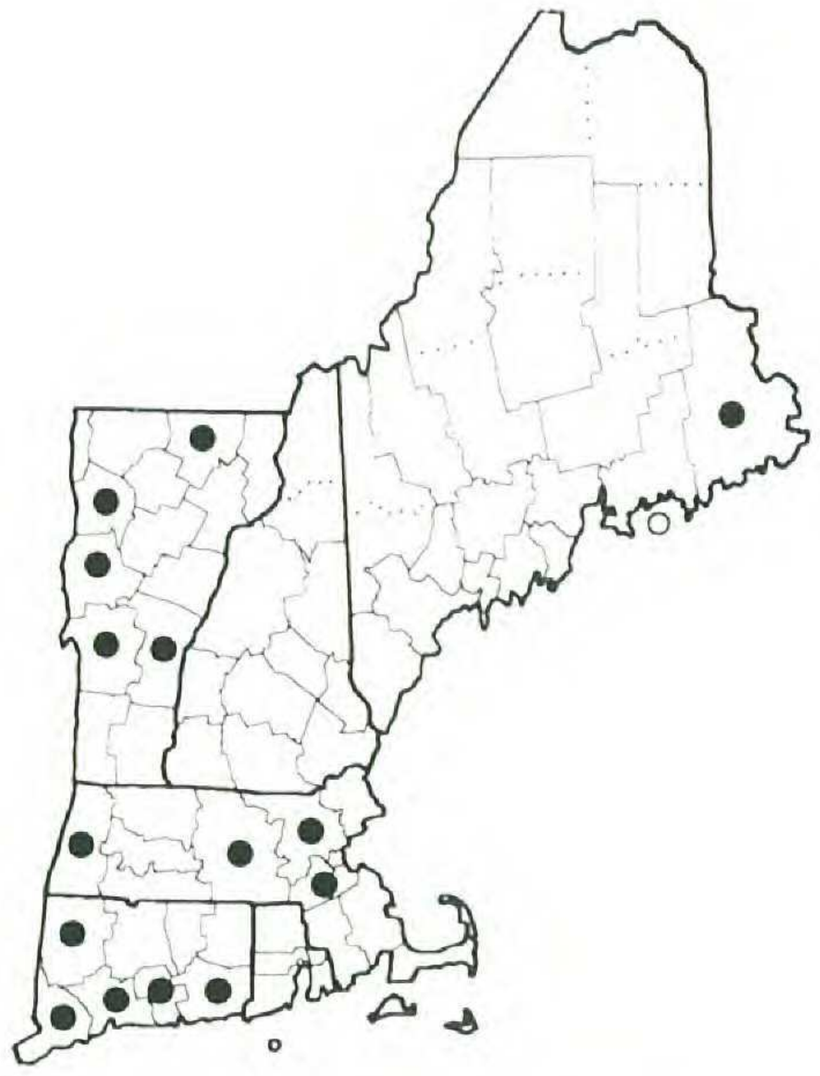


Potamogeton praelongus

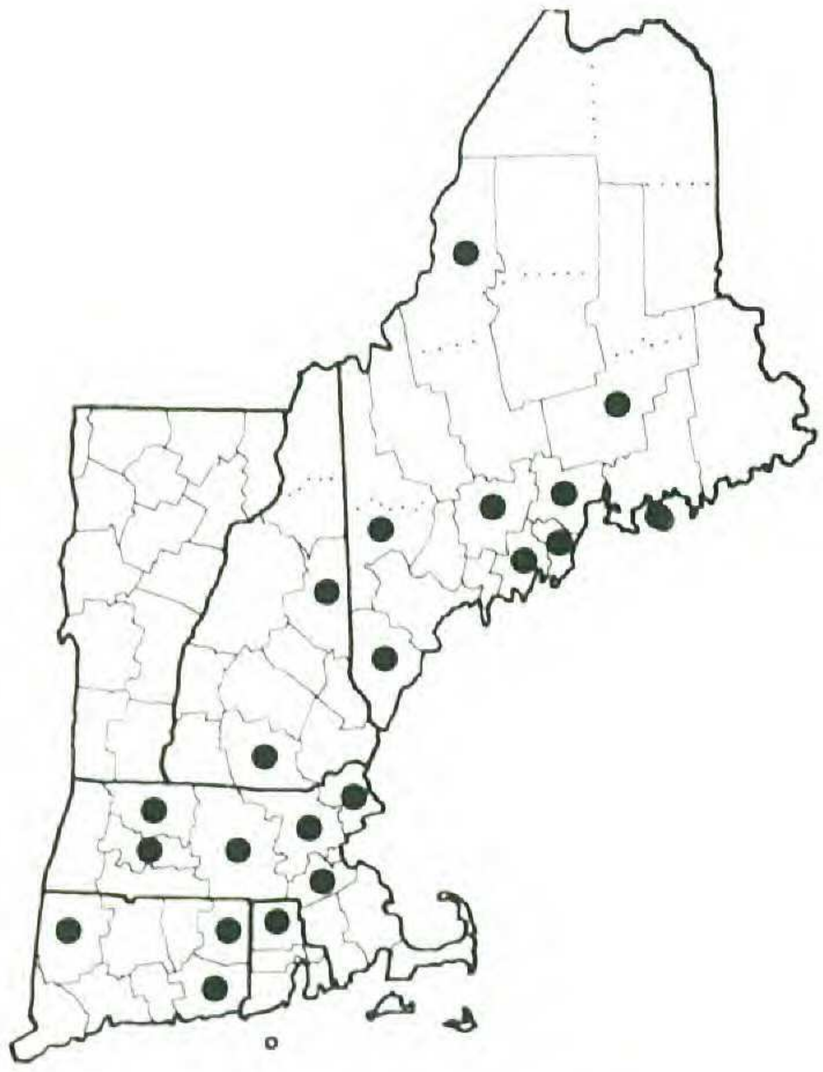
Figure 69. Distribution maps for *Potamogeton obtusifolius, P. ogdenii, P. perfoliatus,* and *P. praelongus.*



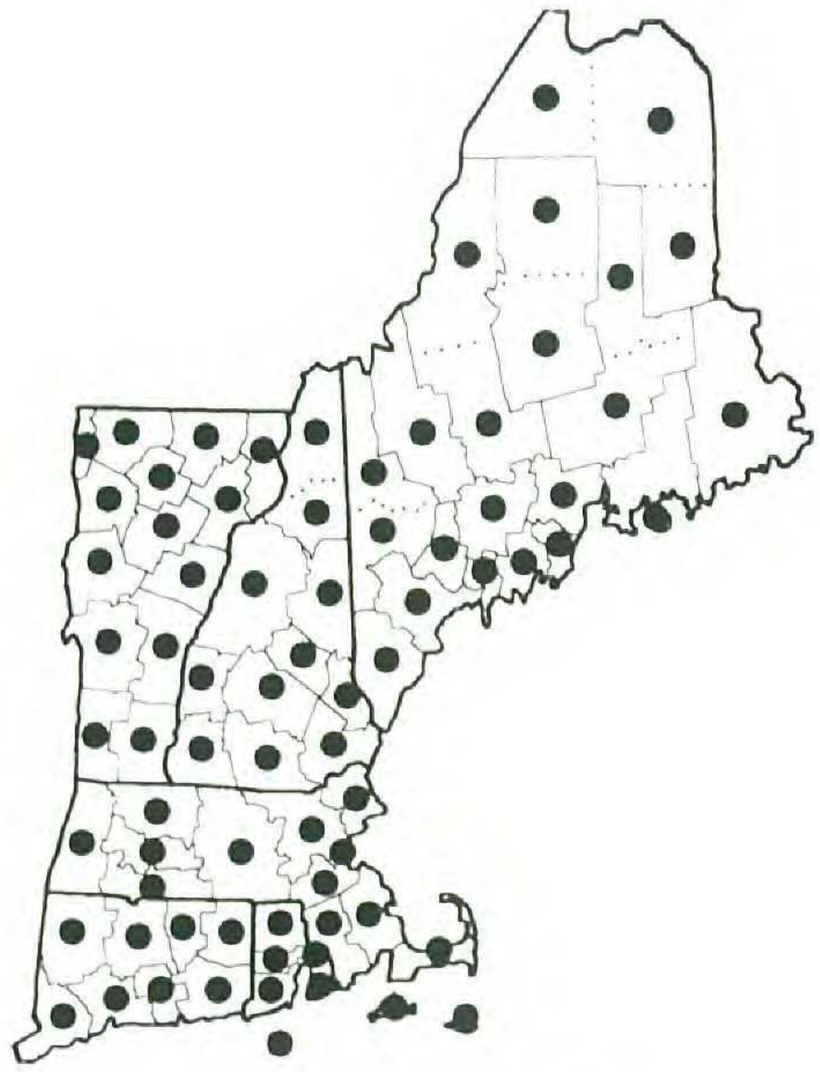
Potamogeton pulcher



Potamogeton pusillus
subsp. *pusillus*

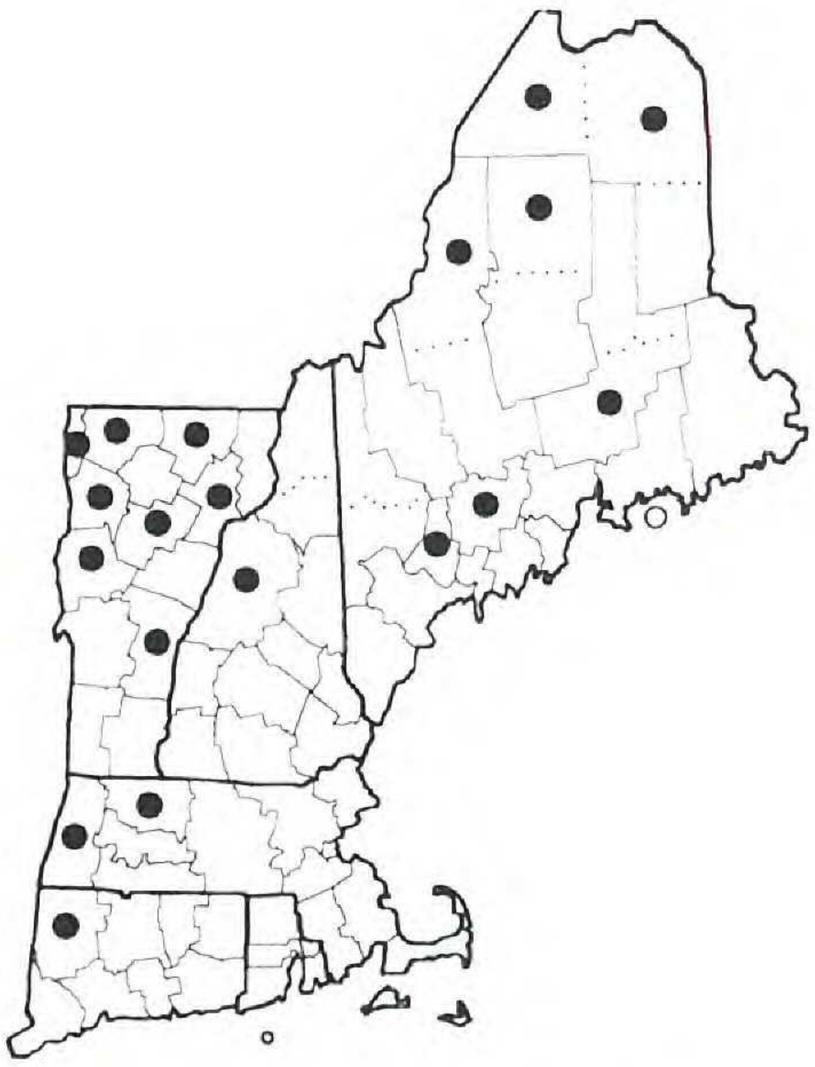


Potamogeton pusillus
subsp. *gemmiparus*

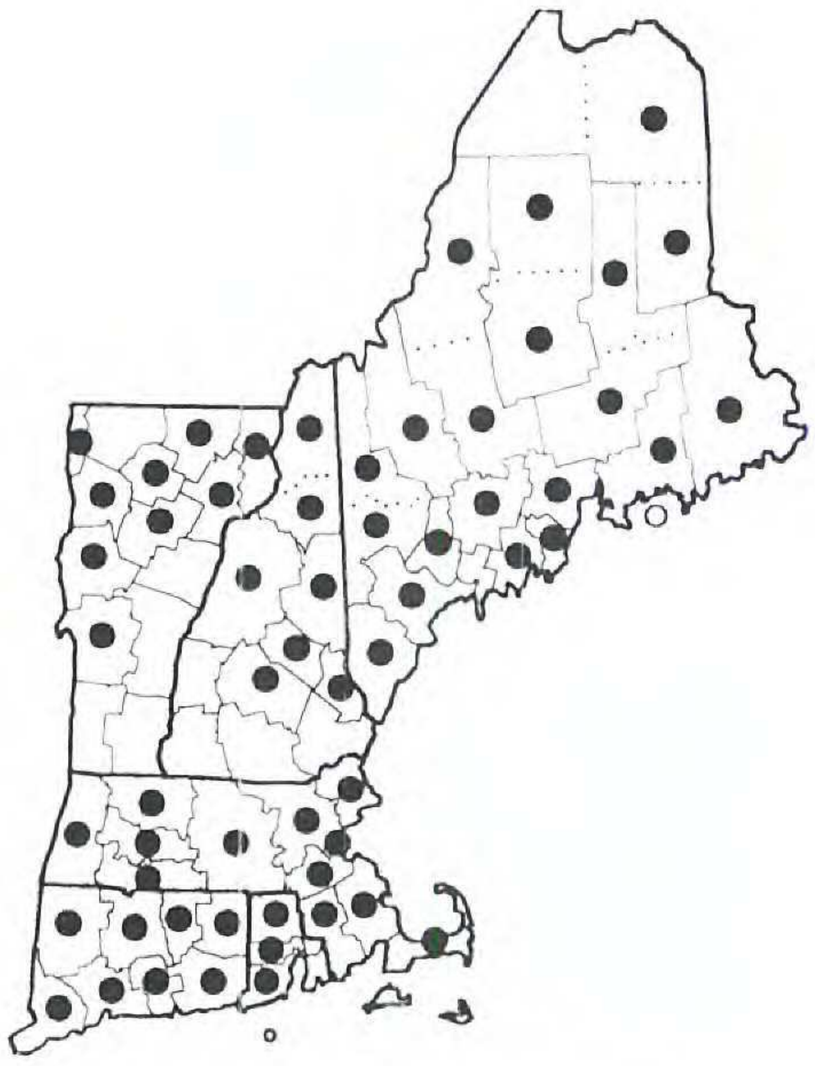


Potamogeton pusillus
subsp. *tenuissimus*

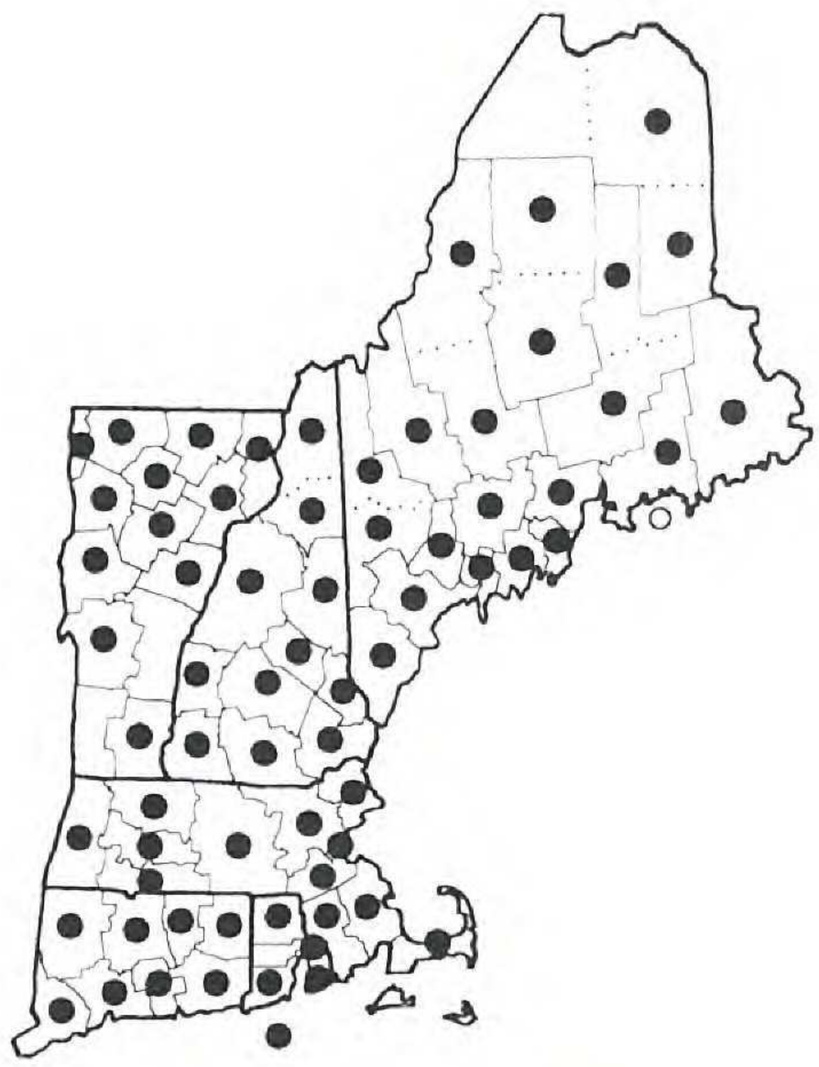
Figure 70. Distribution maps for *Potamogeton pulcher*, *P. pusillus* subsp. *pusillus*, *P. pusillus* subsp. *gemmiparus*, and *P. pusillus* subsp. *tenuissimus*.



Potamogeton richardsonii



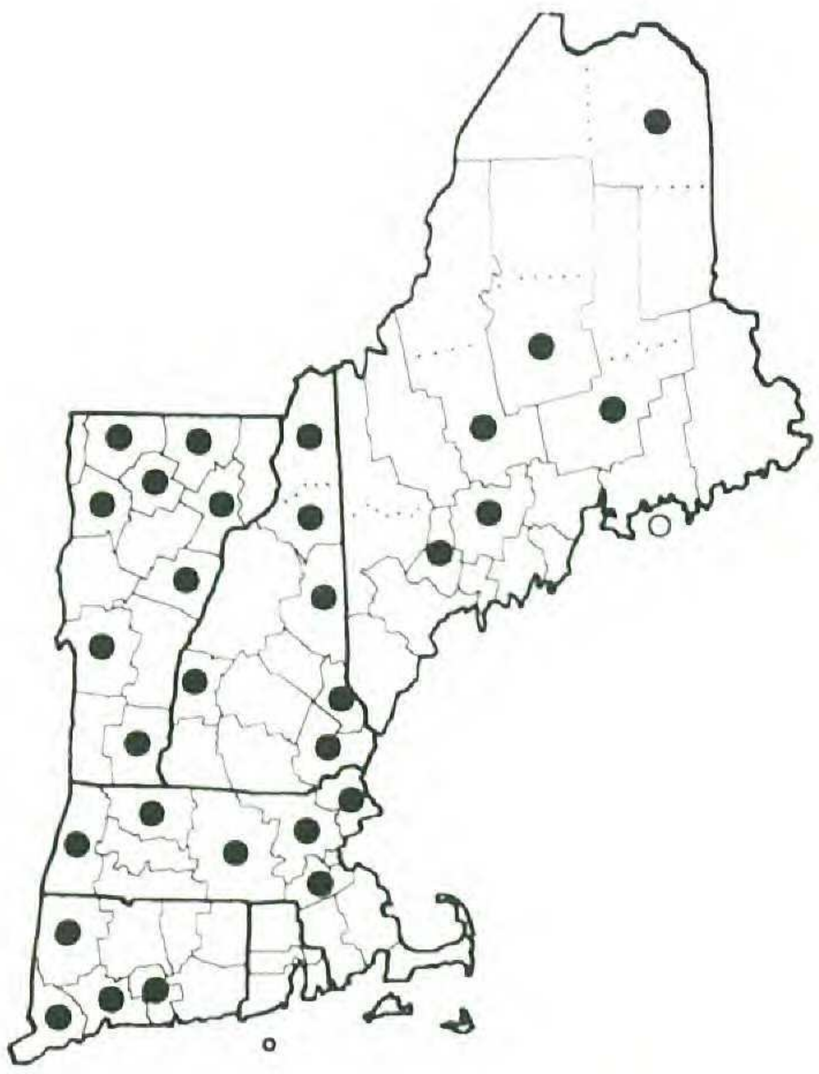
Potamogeton robbinsii



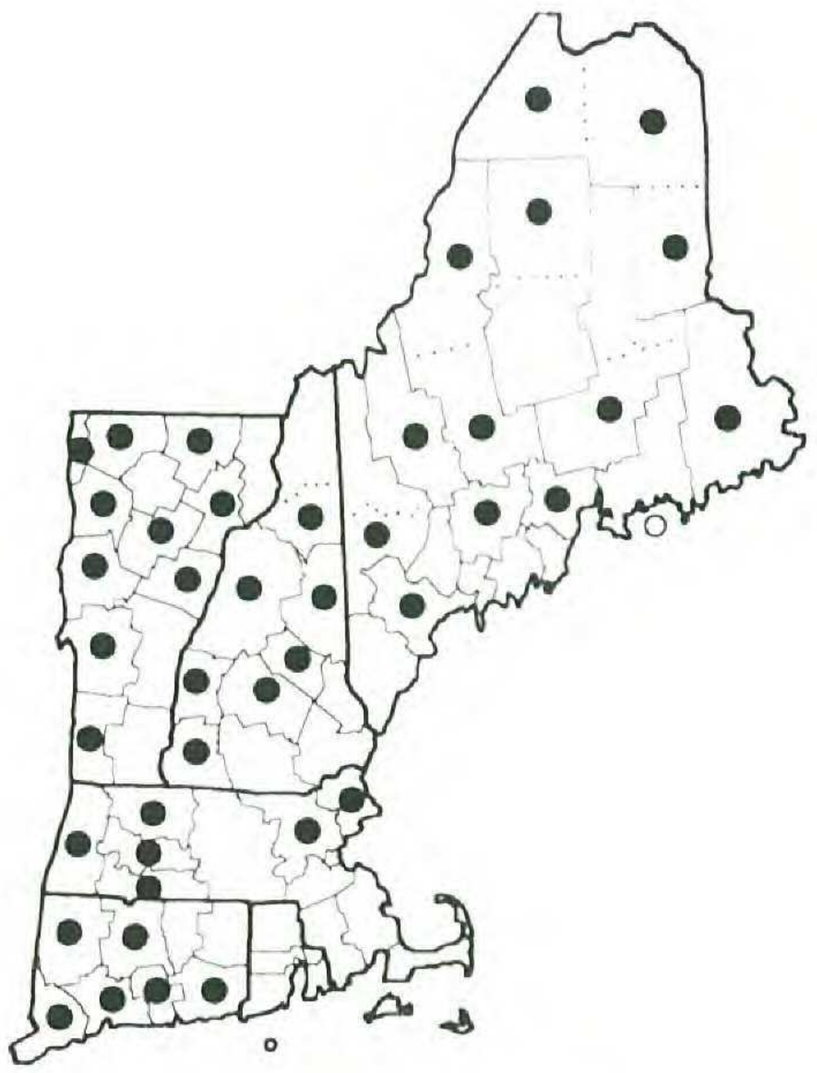
Potamogeton spirillus

Potamogeton strictifolius

Figure 71. Distribution maps for *Potamogeton richardsonii, P. robbinsii, P. spirillus,* and *P. strictifolius.*



Potamogeton vaseyi



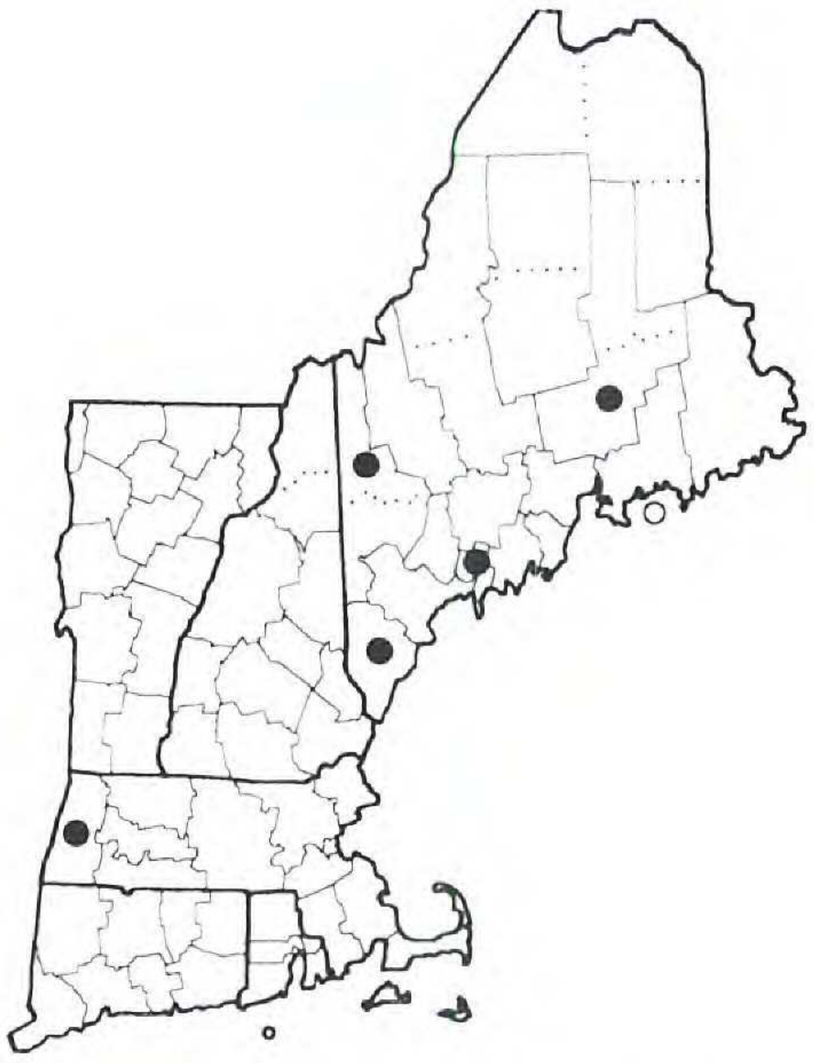
Potamogeton zosteriformis

Potamogeton alpinus
X *P. epihydrus*

Potamogeton amplifolius
X *P. illinoensis*

Figure 72. Distribution maps for *Potamogeton vaseyi, P. zosteriformis, P. alpinus* X *P. epihydrus,* and *P. amplifolius* X *P. illinoensis.*

Potamogeton amplifolius X *P. praelongus*



Potamogeton X *argutulus*

Potamogeton X *faxonii*

Potamogeton X *haynesii*

Figure 73. Distribution maps for *Potamogeton amplifolius* X *P. praelongus*, *P.* X *argutulus*, *P.* X *faxonii*, and *P.* X *haynesii*.

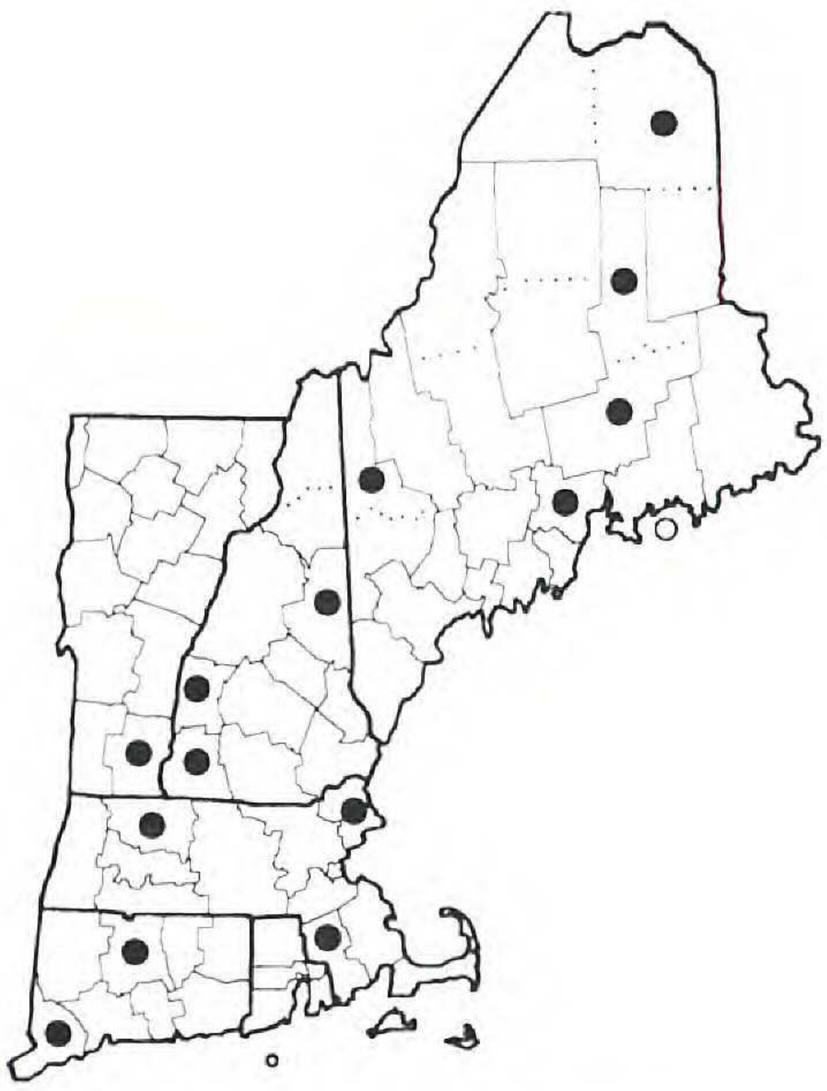
Potamogeton illinoensis X *P. perfoliatus*

Potamogeton illinoensis X *P. richardsonii*

Potamogeton X *mysticus*

Potamogeton X *nericius*

Figure 74. Distribution maps for *Potamogeton illinoensis* X *P. perfoliatus*, *P. illinoensis* X *P. richardsonii*, *P.* X *mysticus*, and *P.* X *nericius*.



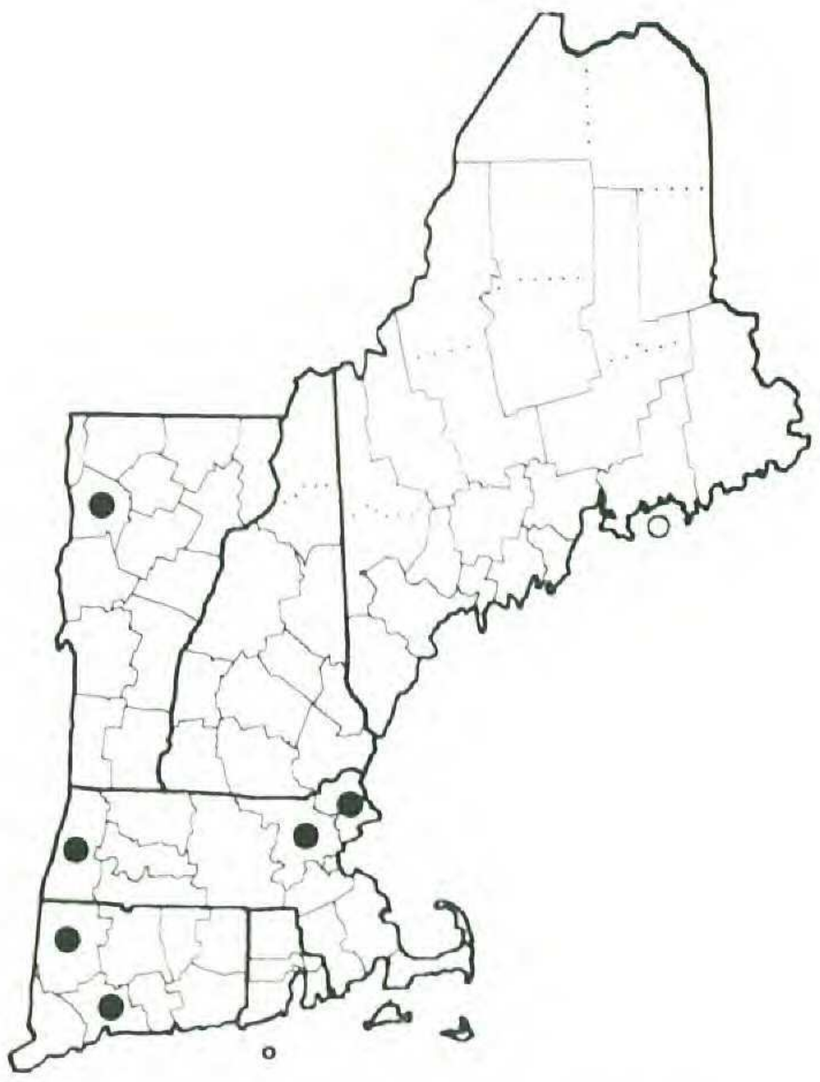
Potamogeton X *nitens*

Potamogeton perfoliatus X *P. richardsonii*

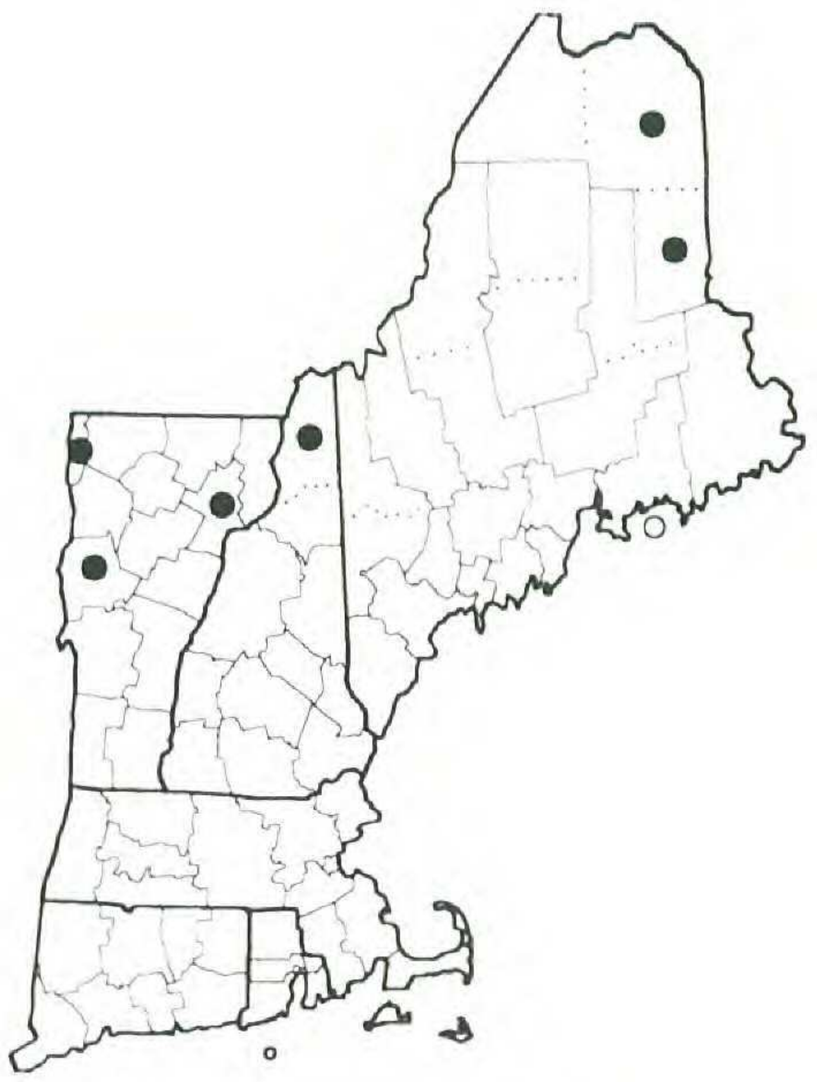
Potamogeton praelongus X *P. richardsonii*

Potamogeton X *prussicus*

Figure 75. Distribution maps for *Potamogeton* X *nitens*, *P. perfoliatus* X *P. richardsonii*, *P. praelongus* X *P. richardsonii*, and *P.* X *prussicus*.

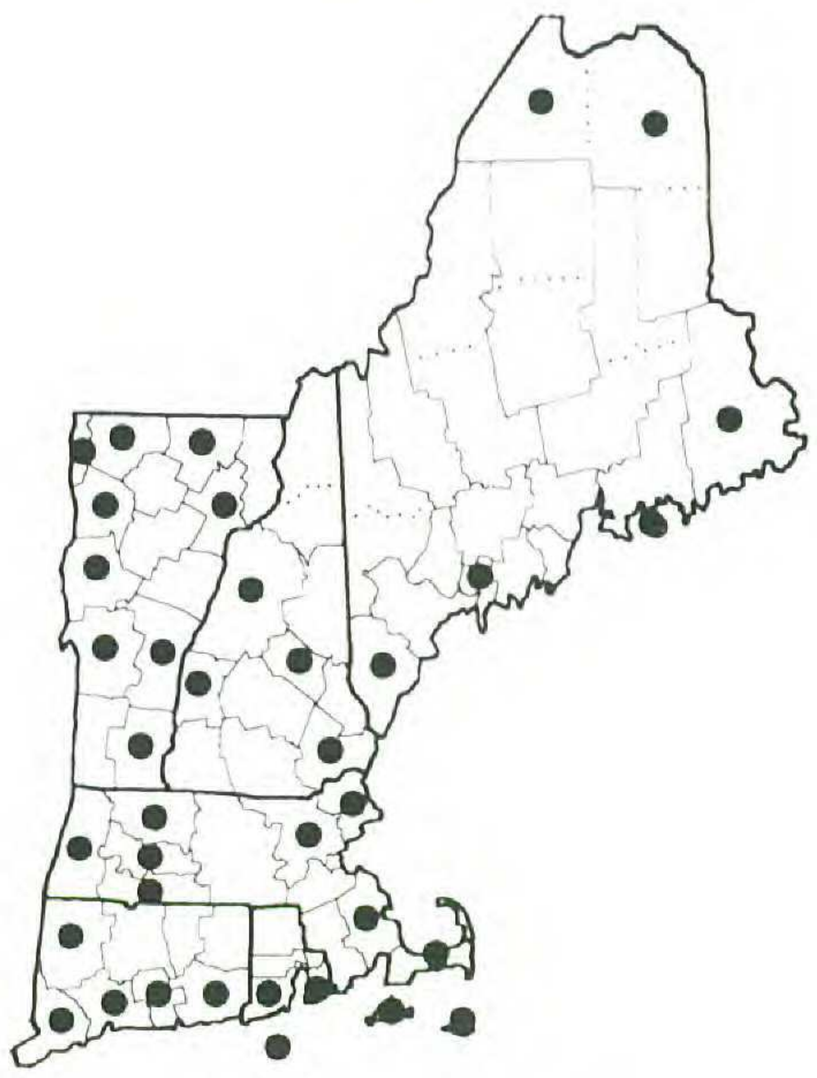


Potamogeton X *spathuliformis*



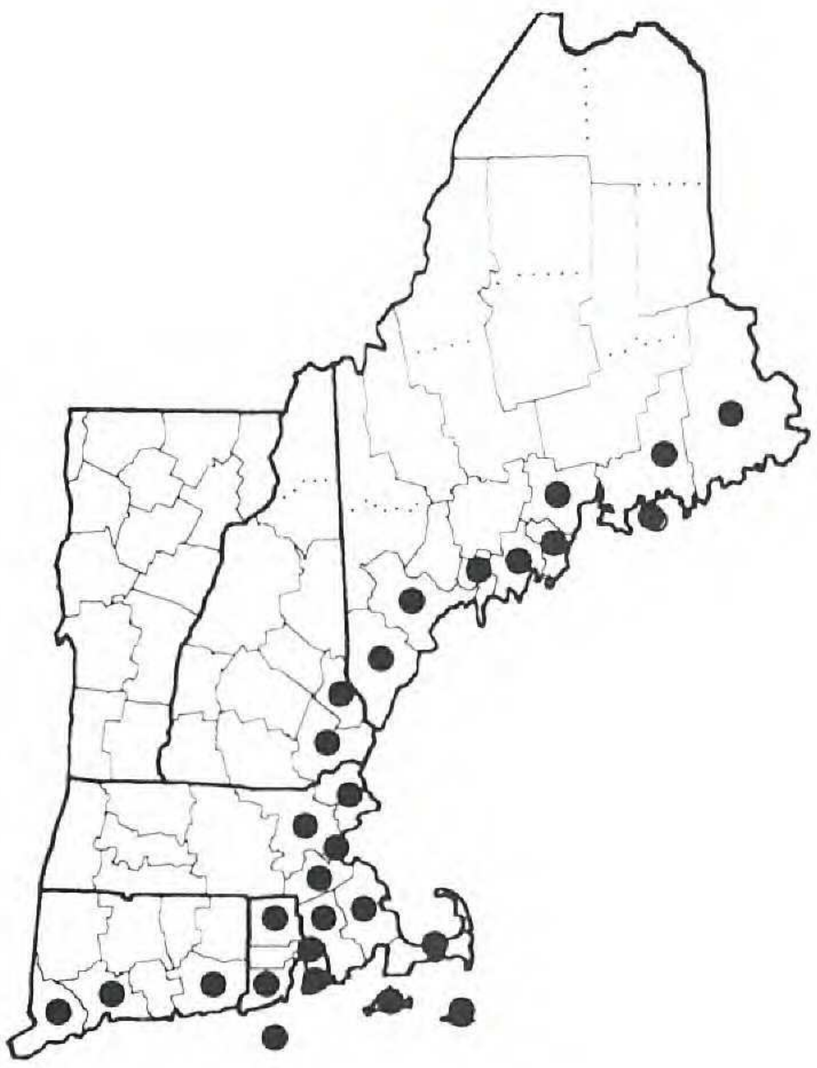
Stuckenia filiformis
subsp. *alpina*

Stuckenia filiformis
subsp. *occidentalis*

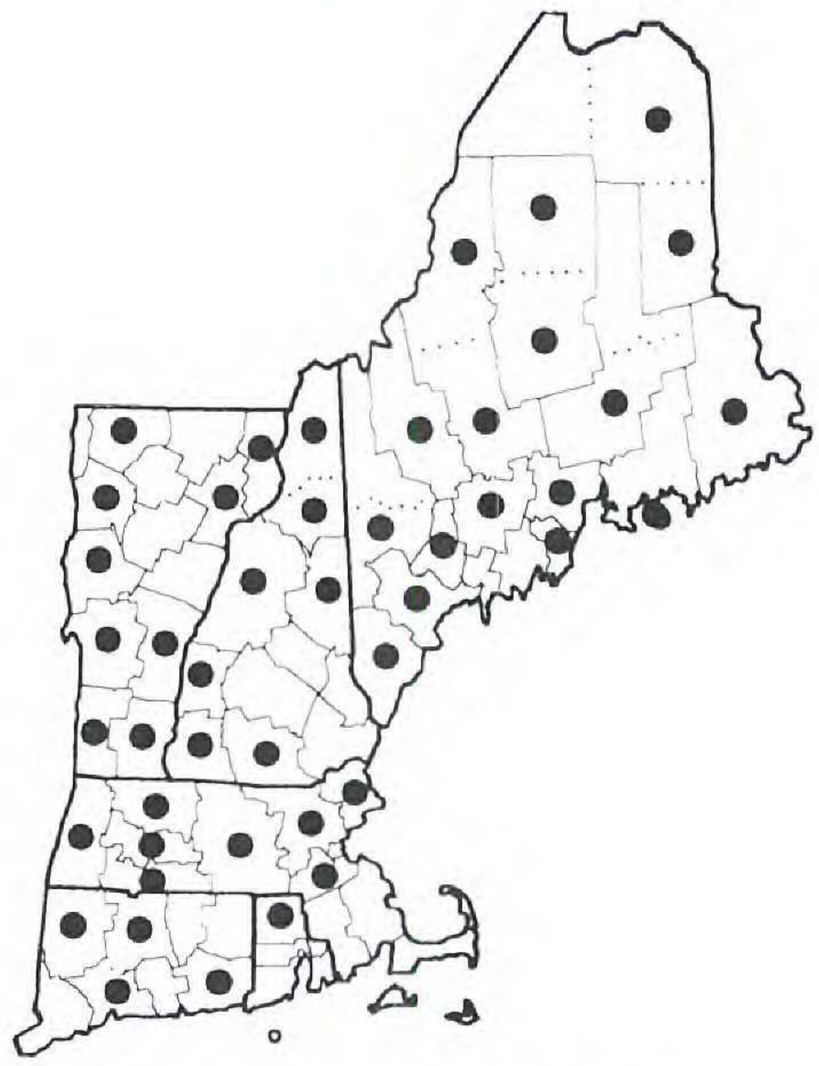


Stuckenia pectinata

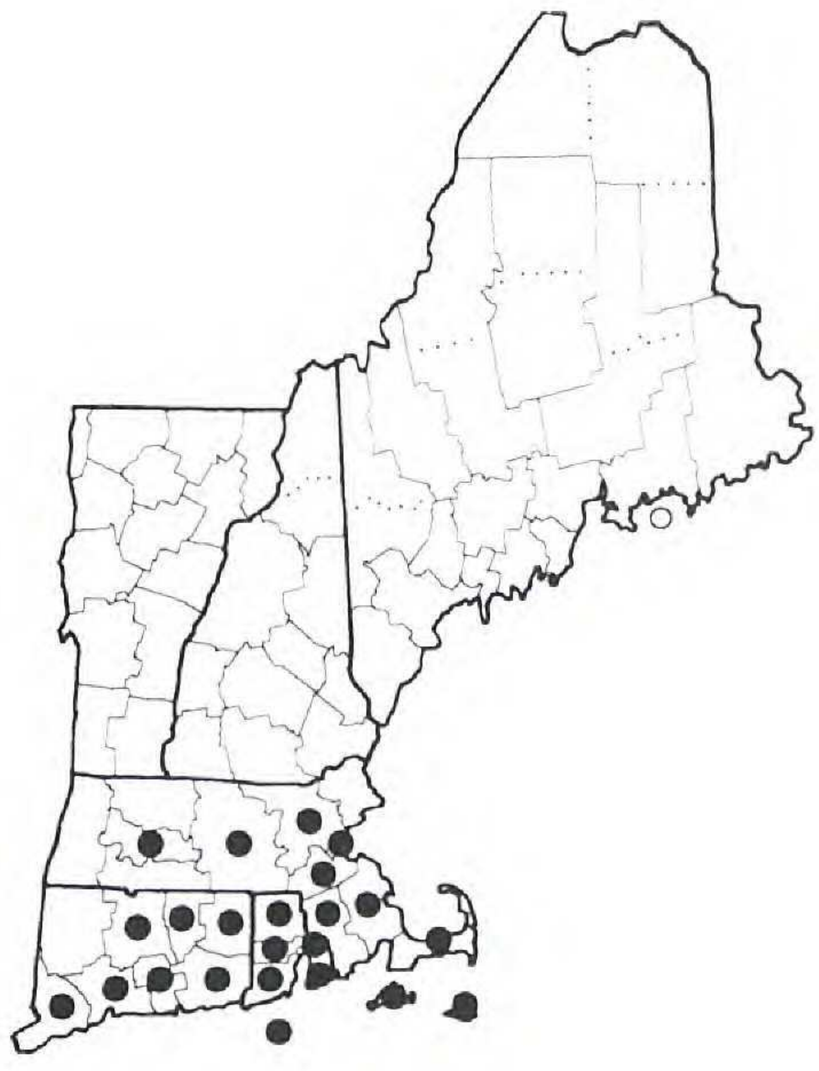
Figure 76. Distribution maps for *Potamogeton* X *spathuliformis*, *Stuckenia filiformis* subsp. *alpina*, *S. filiformis* subsp. *occidentalis*, and *S. pectinata*.



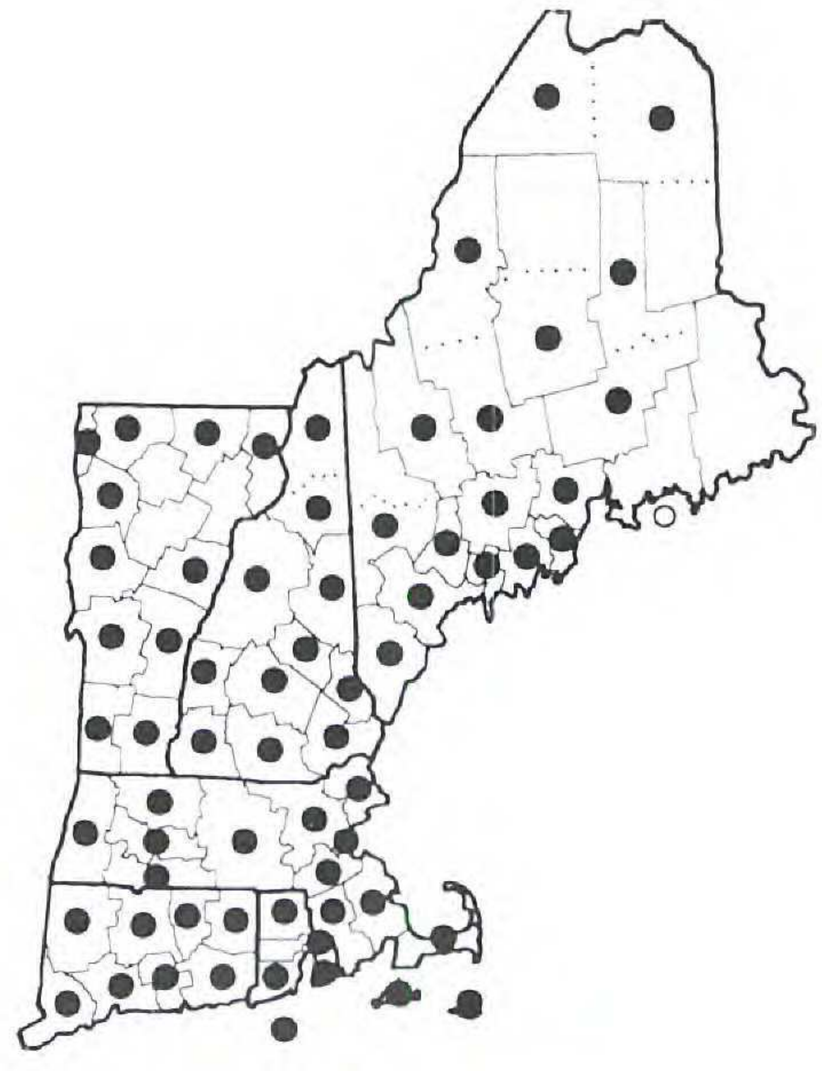
Ruppia maritima



Scheuchzeria palustris



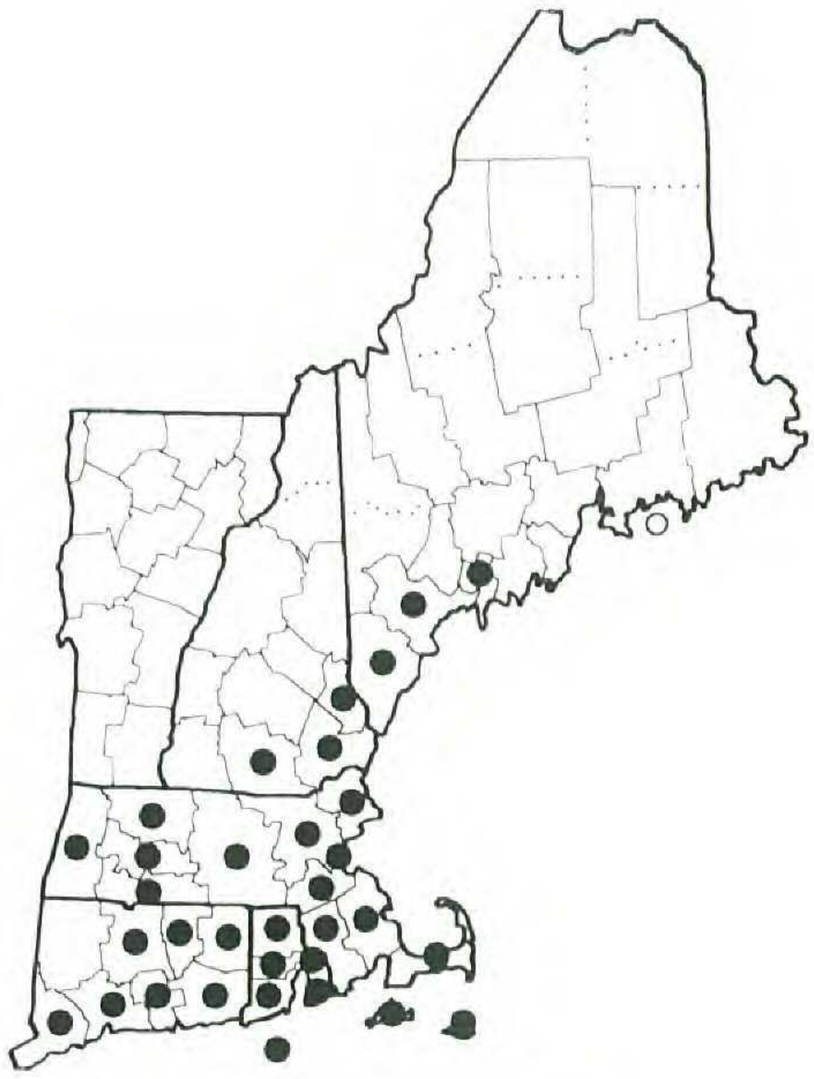
Smilax glauca



Smilax herbacea

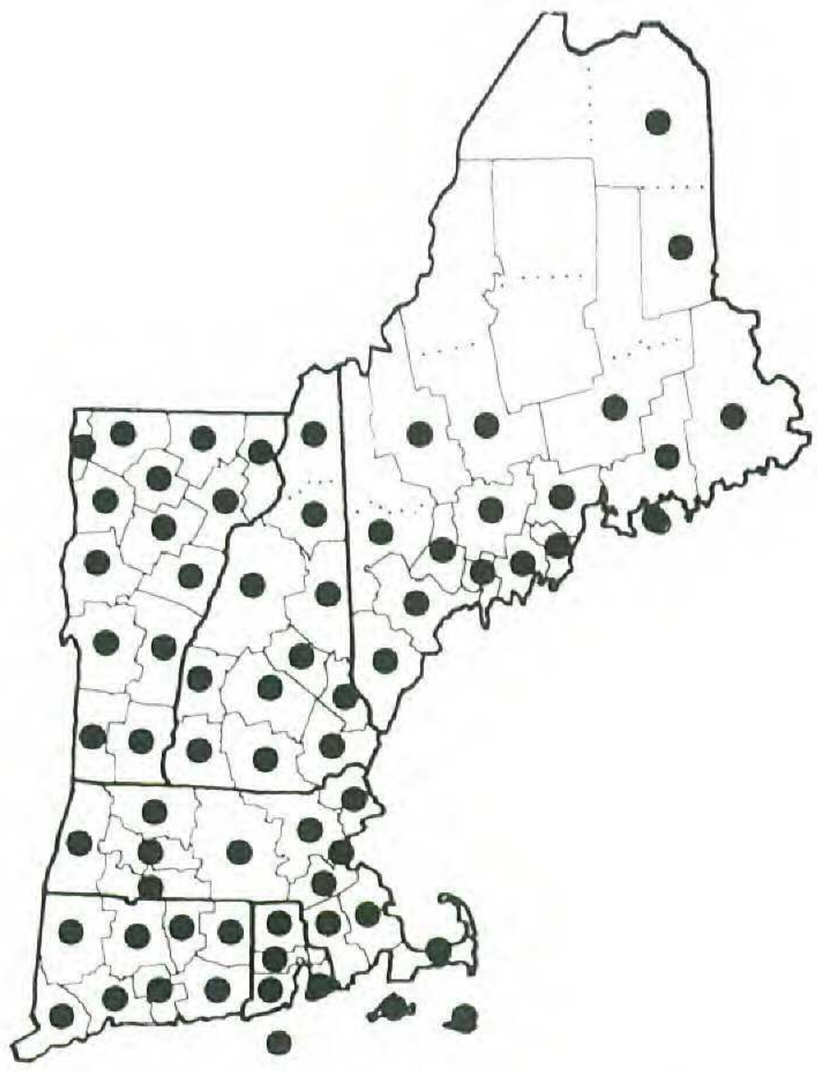
Figure 77. Distribution maps for *Ruppia maritima, Scheuchzeria palustris, Smilax glauca,* and *S. herbacea.*

Smilax pulverulenta



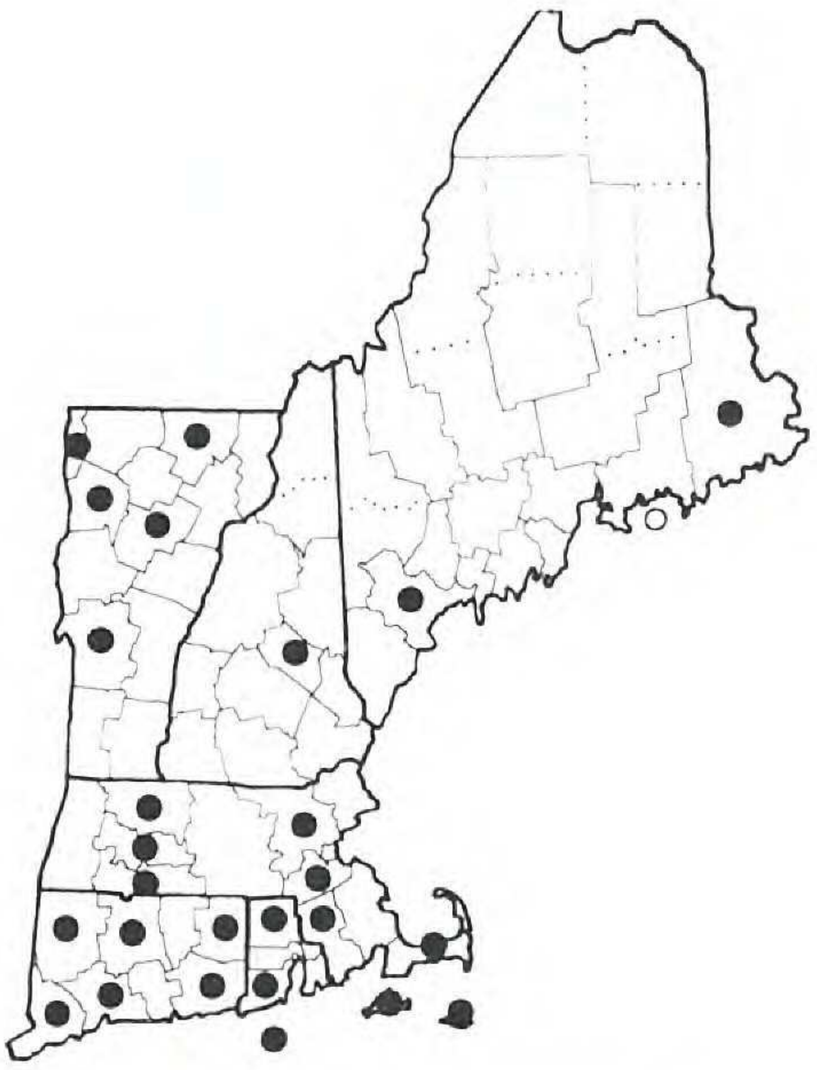
Smilax rotundifolia

Smilax tamnoides

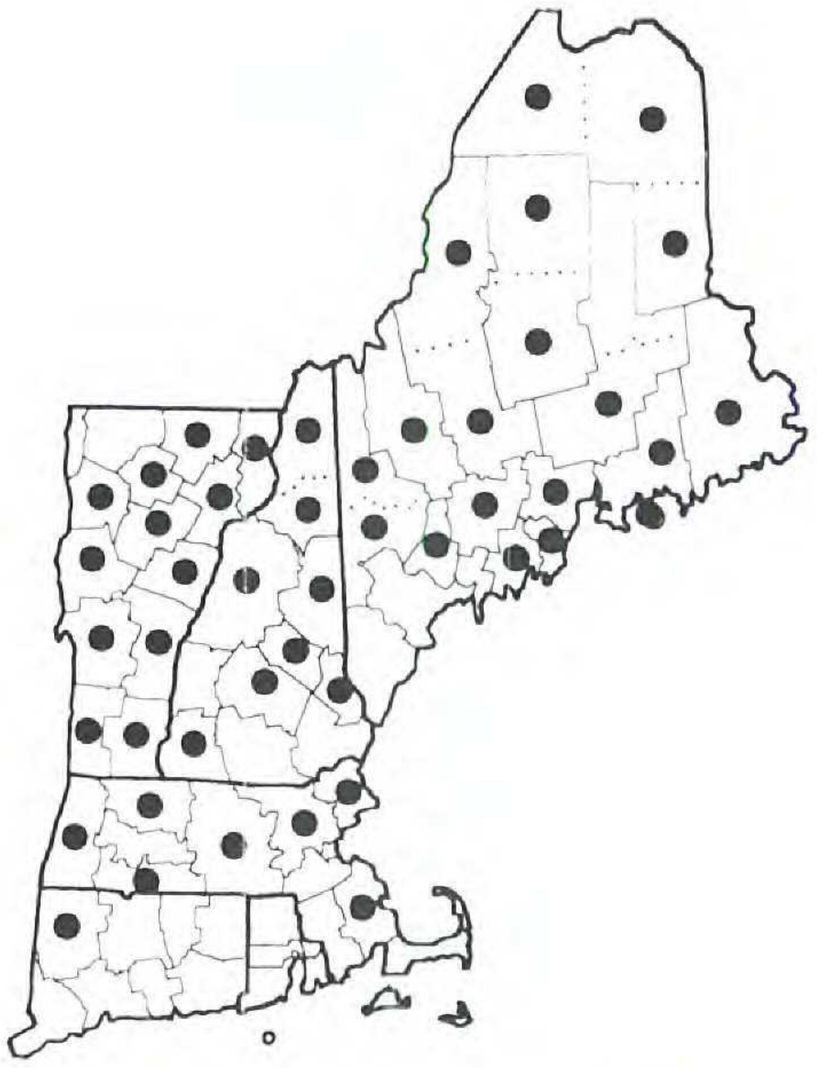


Sparganium americanum

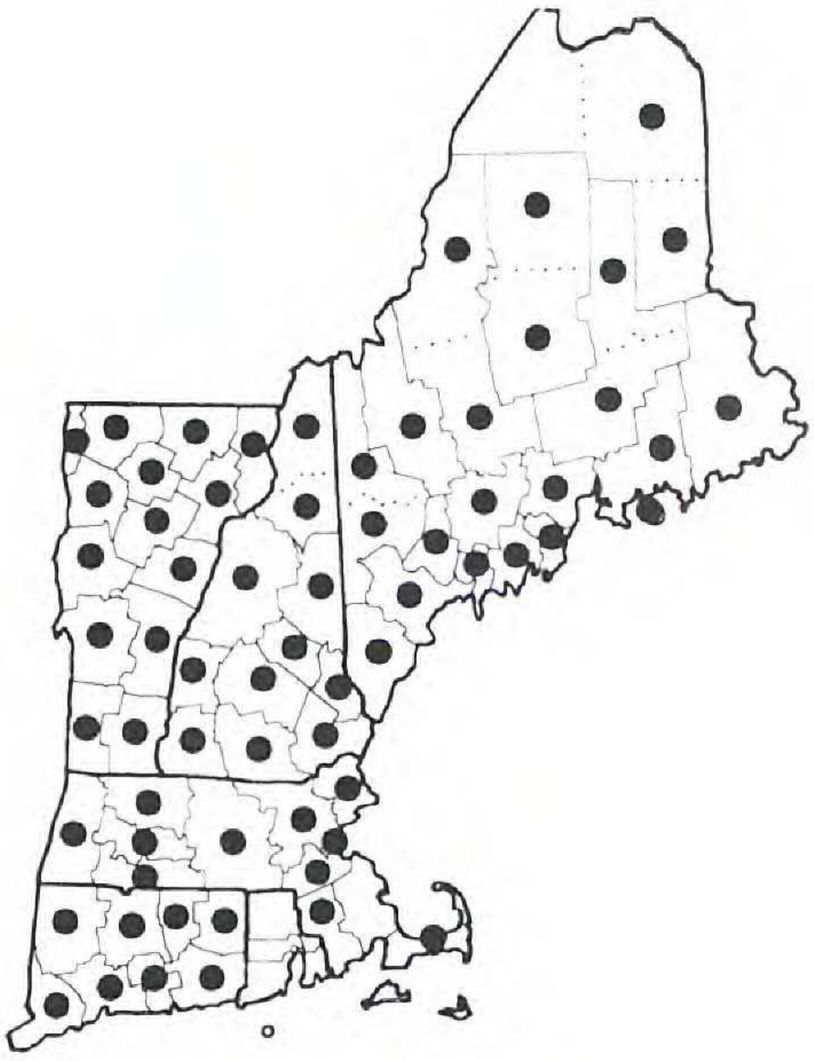
Figure 78. Distribution maps for *Smilax pulverulenta, S. rotundifolia, S. tamnoides,* and *Sparganium americanum.*



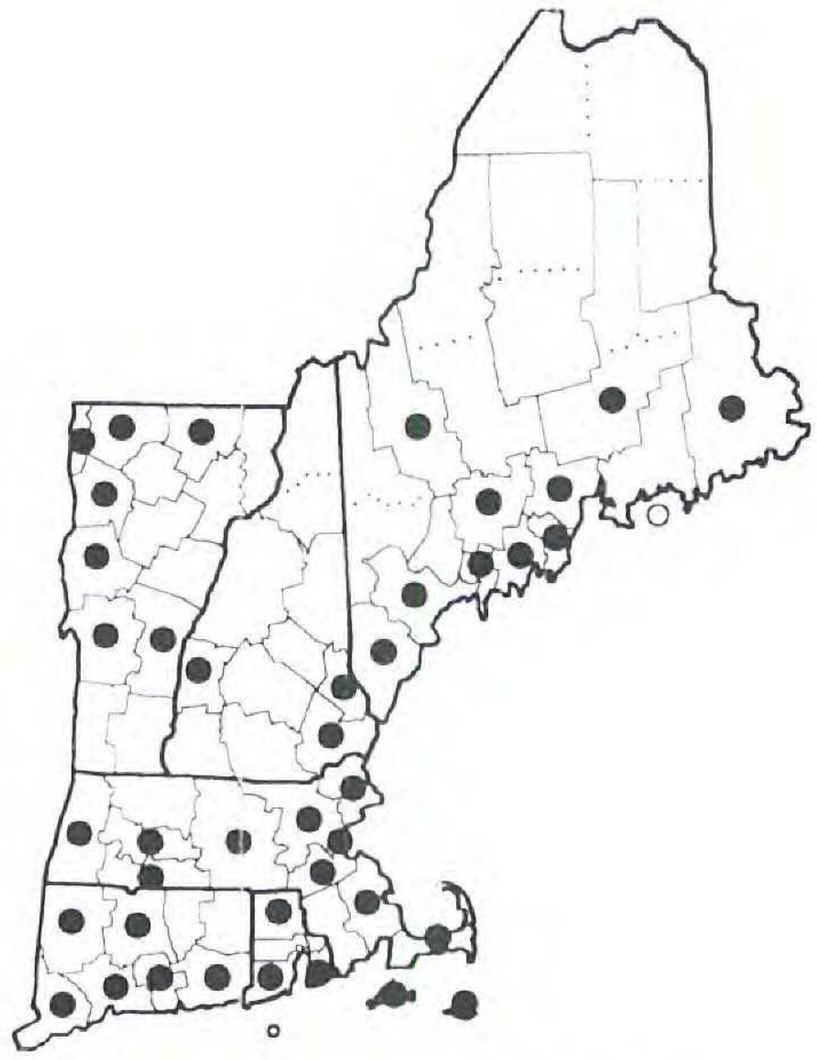
Sparganium androcladum



Sparganium angustifolium

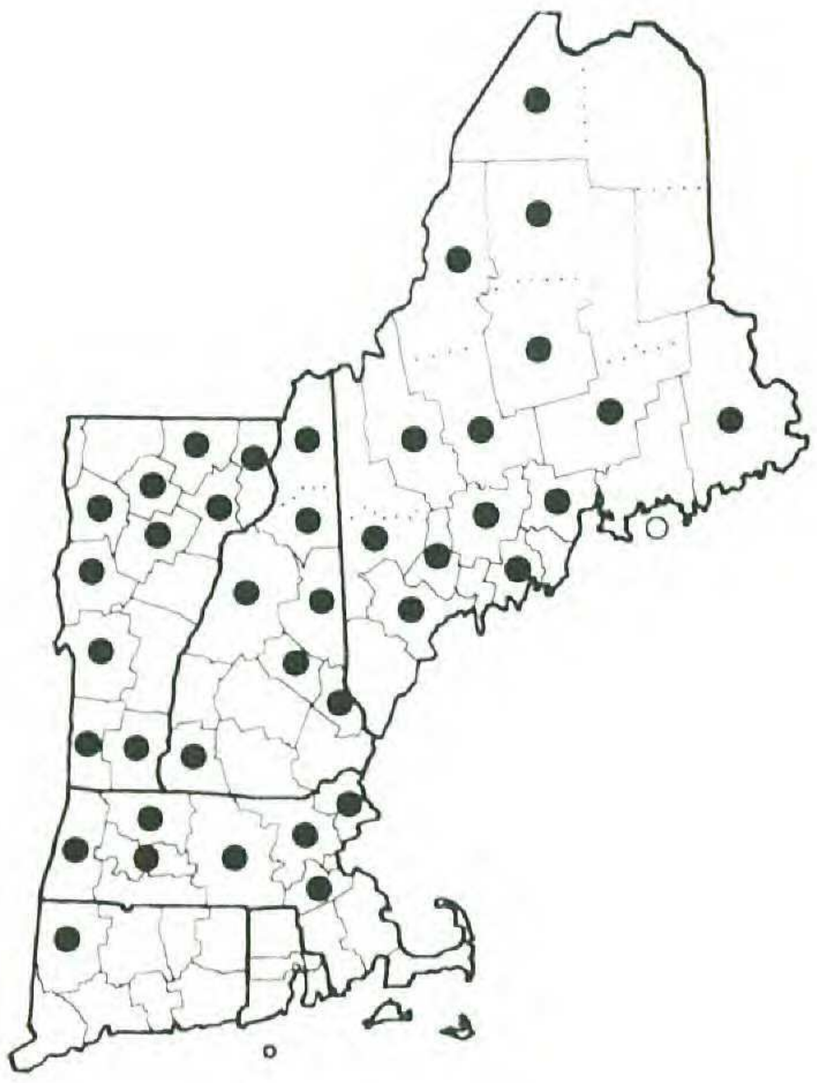


Sparganium emersum

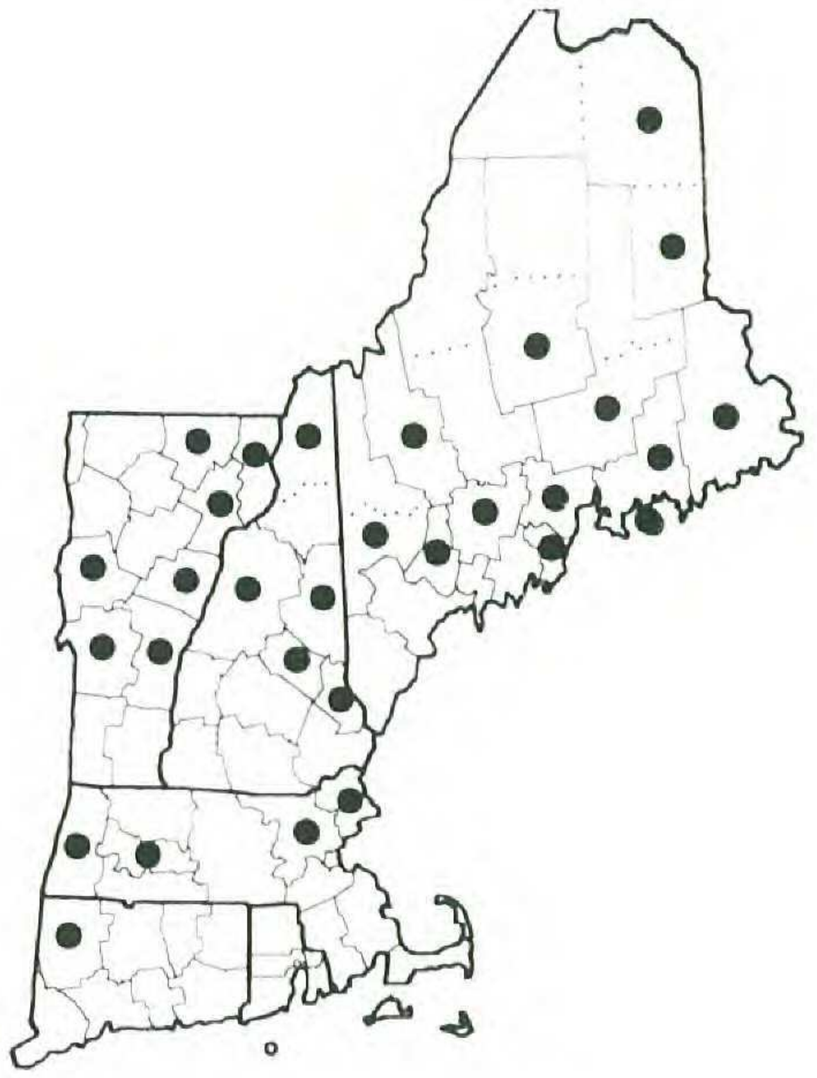


Sparganium eurycarpum

Figure 79. Distribution maps for *Sparganium androcladum*, *S. angustifolium*, *S. emersum*, and *S. eurycarpum*.

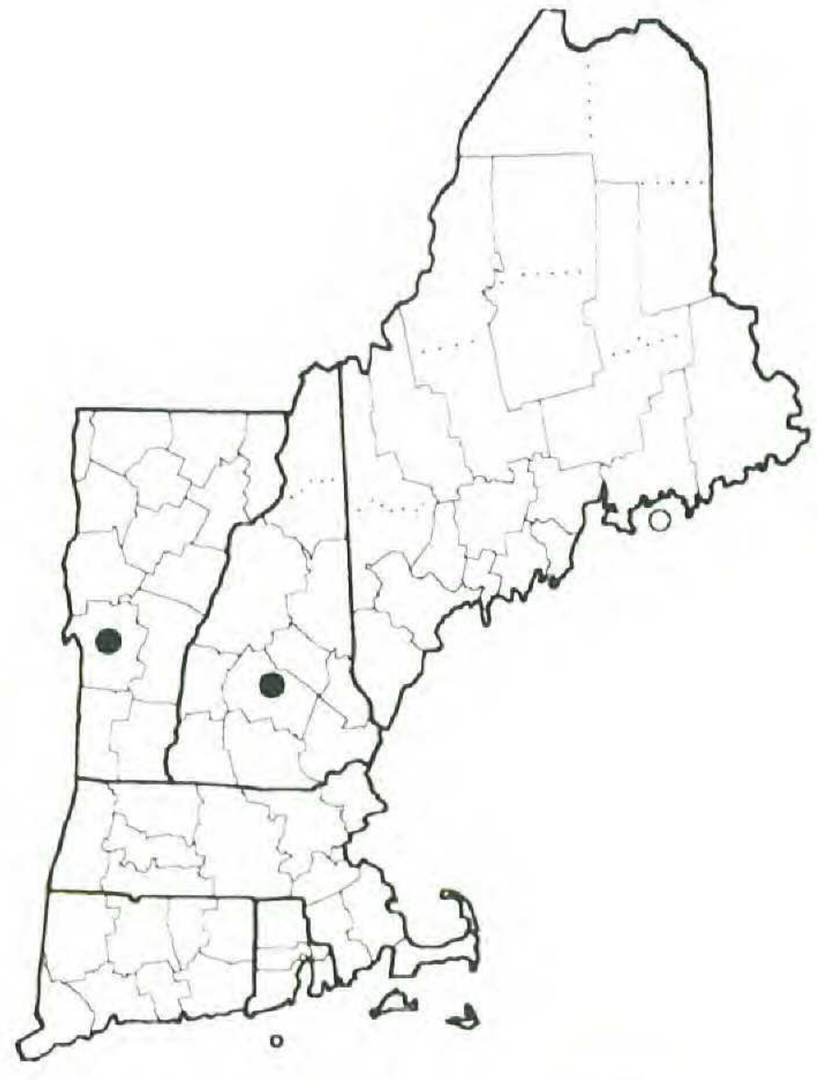


Sparganium fluctuans



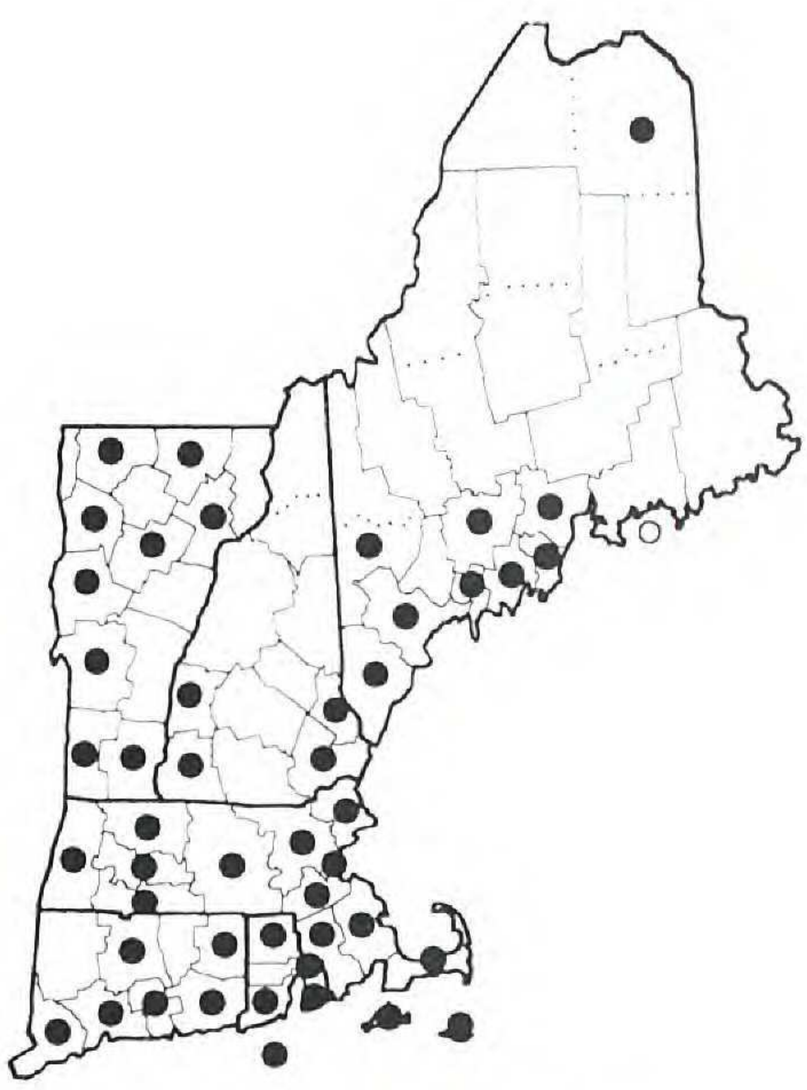
Sparganium natans

Sparganium americanum
X *S. fluctuans*

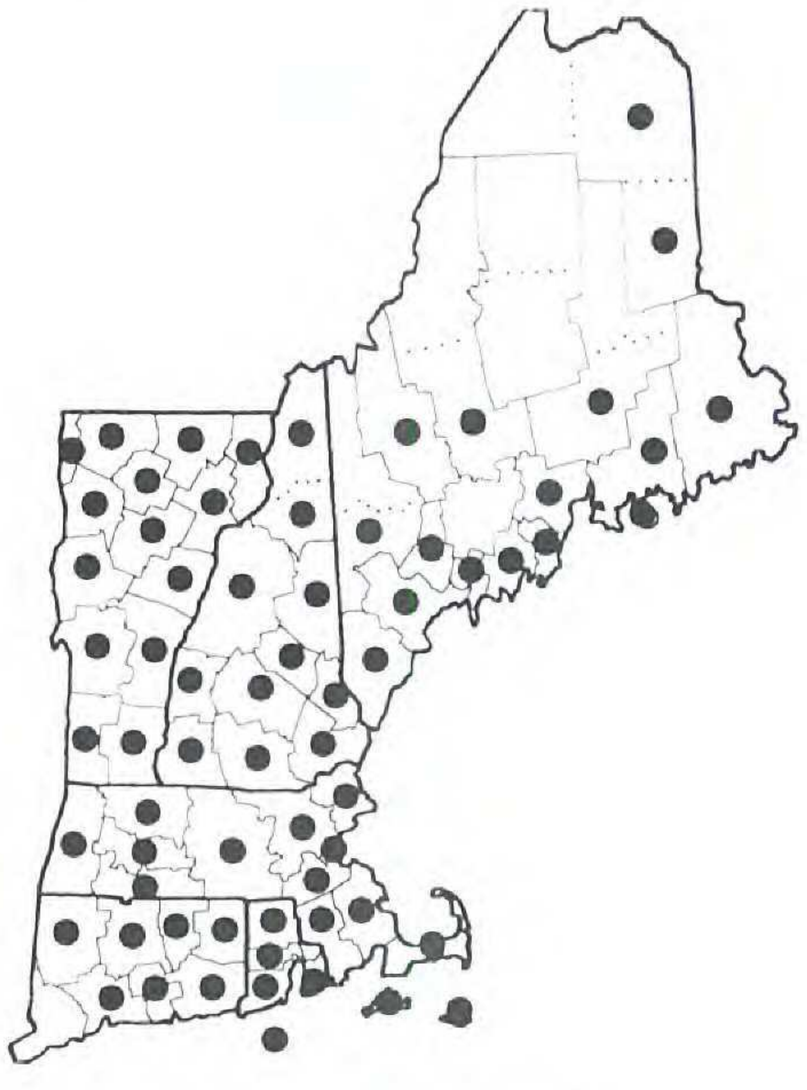


Sparganium angustifolium
X *S. emersum*

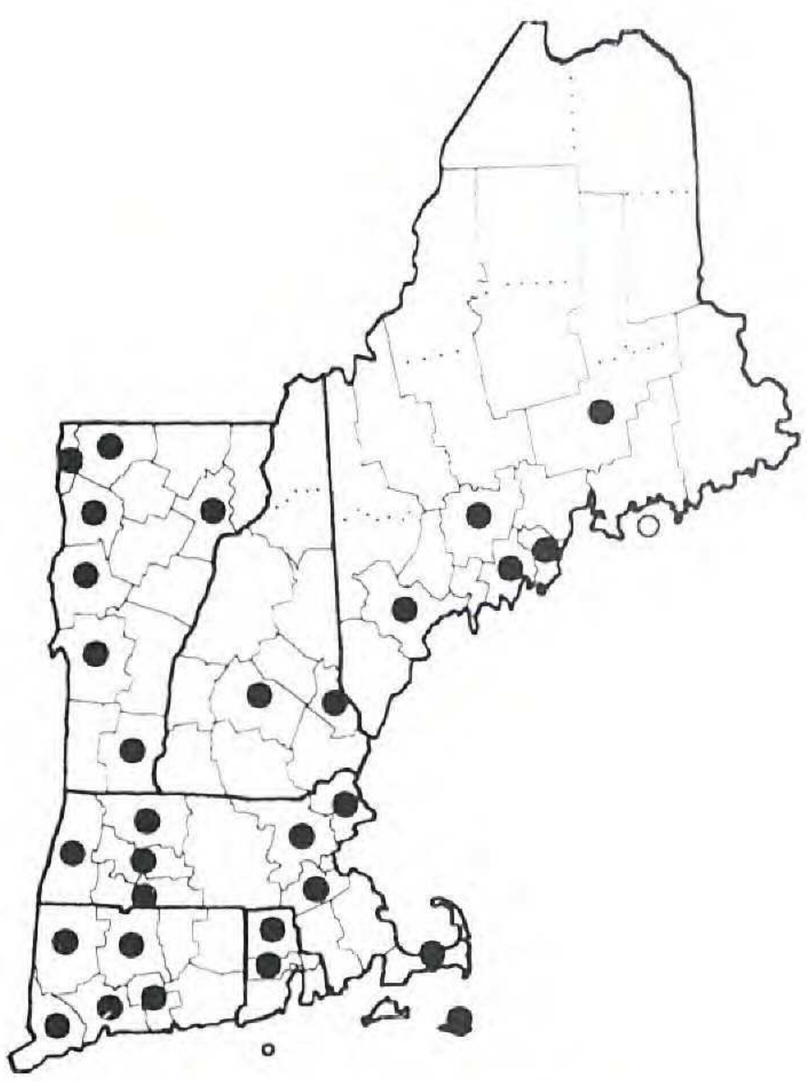
Figure 80. Distribution maps for *Sparganium fluctuans, S. natans, S. americanum* X *S. fluctuans, S. angustifolium* X *S. emersum.*



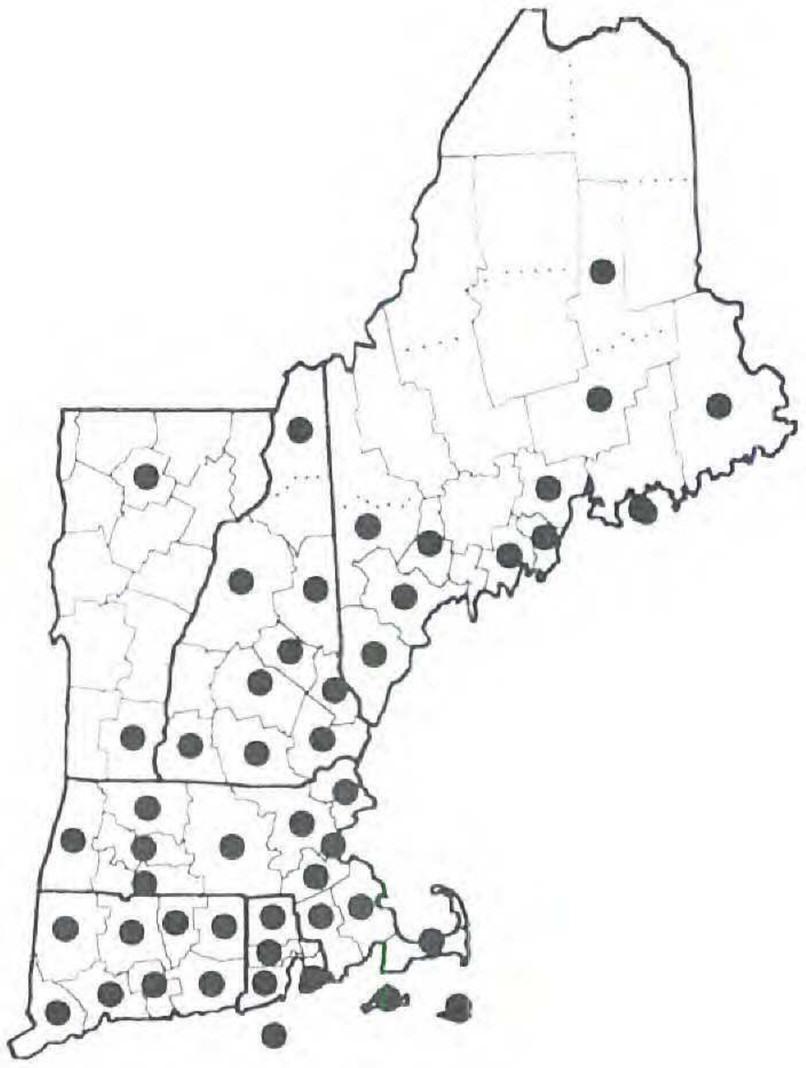
Typha angustifolia



Typha latifolia

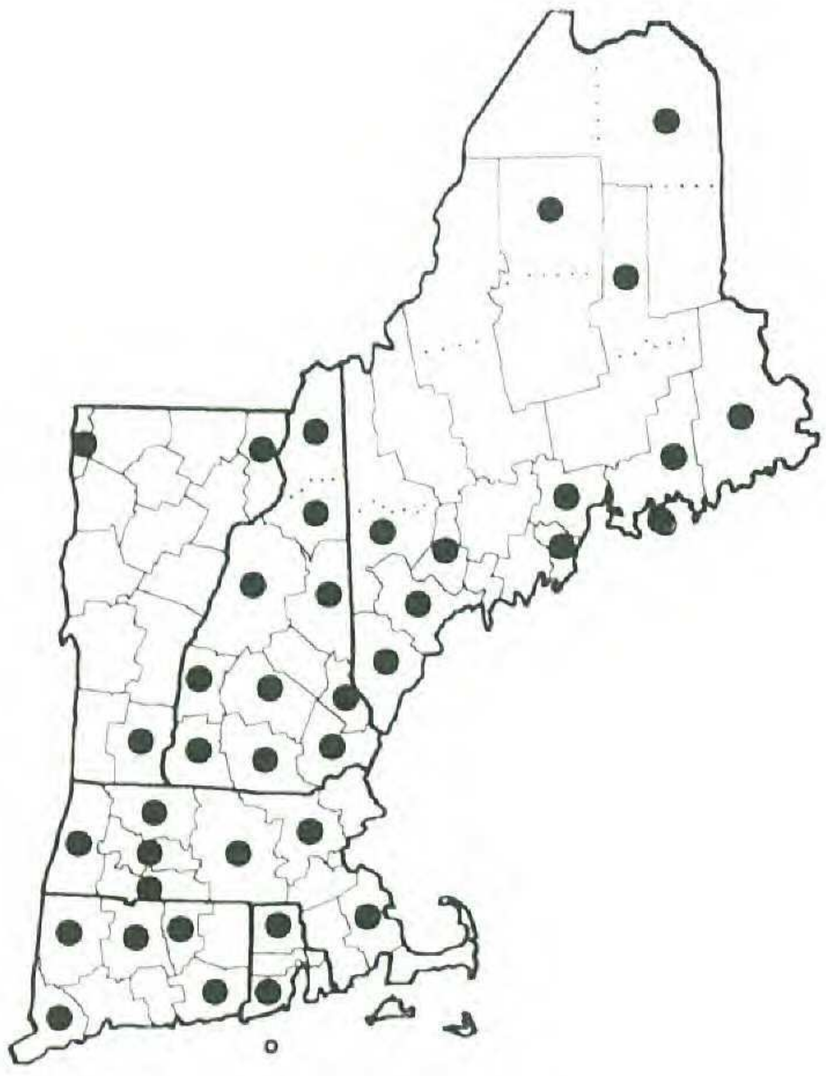


Typha X *glauca*



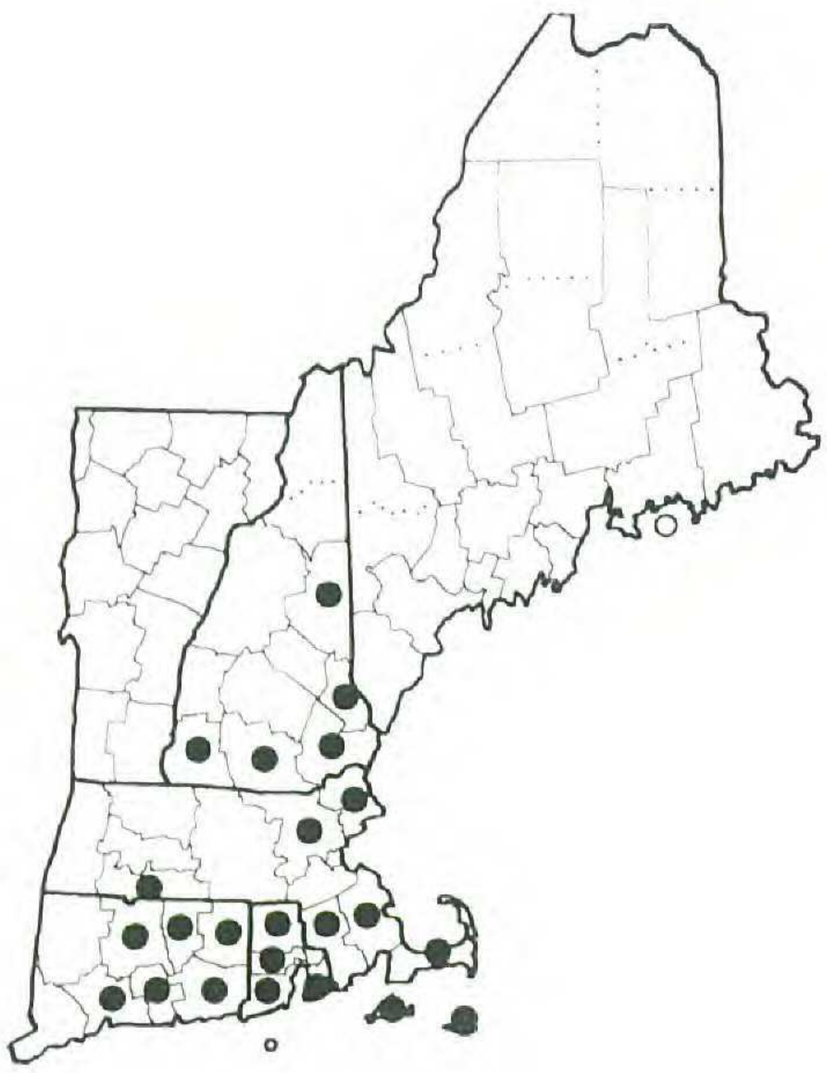
Xyris differmis
var. *differmis*

Figure 81. Distribution maps for *Typha angustifolia, T. latifolia, T.* X *glauca,* and *Xyris differmis* var. *differmis.*

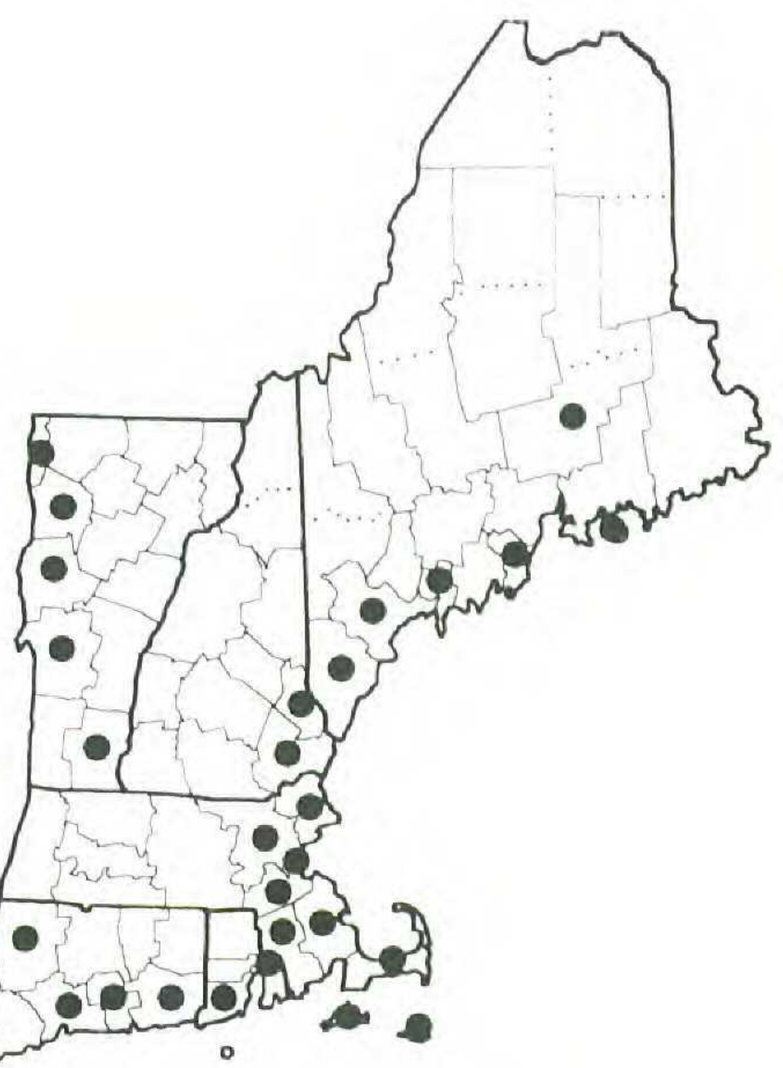


Xyris montana

Xyris smalliana



Xyris torta



Zannichellia palustris

Figure 82. Distribution maps for *Xyris montana, X. smalliana, X. torta,* and *Zannichellia palustris.*

Zostera marina

Figure 83. Distribution map for *Zostera marina.*

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